

MINIMUM COST OF NUTRITIOUS DIET AND AFFORDABILITY ANALYSIS : SRI LANKA

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COST OF DIET AND AFFORDABILITY

The Cost of Diet (CotD) analysis is a method to model the cost of a theoretical, simulated diet which fulfils all nutritional requirements, of an average representative household at the minimal possible cost, based on the availability, price, and nutrient content of local foods using CotD tool.

The CotD tool applies linear programming routines to generate four hypothetical diets using a locally available combination of foods;

- **Energy Only Diet:** The lowest cost diet that only meets the average energy requirements of the members of the household
- **Macro Nutrient Diet:** The lowest cost diet that only meets the average energy and the recommended protein and fat requirements of the members of the household
- **Nutritious Diet:** The lowest cost diet that meets the average energy and the recommended nutrient requirements of the members of the household
- **Food Habits Nutritious Diet:** The lowest cost diet that meets the average energy and the recommended nutrient requirements of the household and reflects cultural consumption patterns

Using estimations of household food expenditure data, the CotD can be used to estimate the proportion of households that could theoretically afford a nutritious diet.

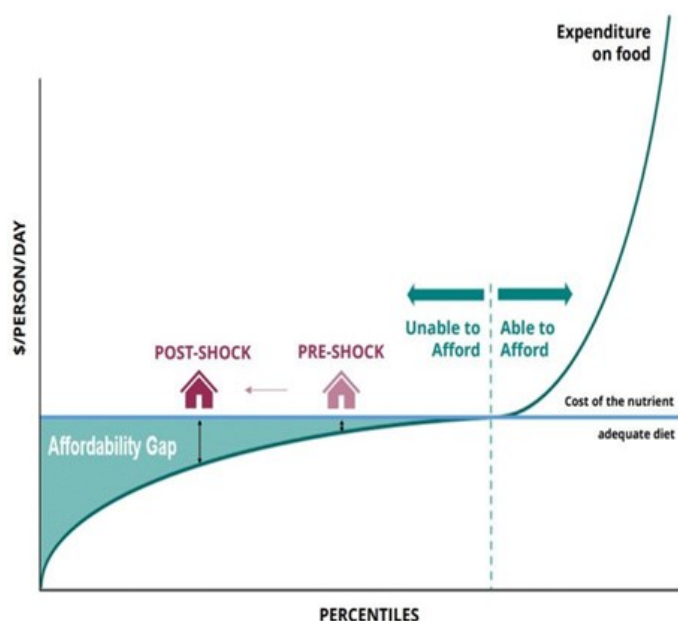
The cost of a nutritious diet as a threshold to estimate whether income is sufficient to afford a nutritious diet is referred to as the “Nutrient Poverty Line”. The cost of energy-only diet which is used to assess the affordability of caloric requirement is referred to as the “Calorie Poverty Line”.

Use of CotD and Affordability Analysis

CotD analysis helps to understand the variation of CotD across geographical locations and different seasons. Nutrients which are hard to meet requirements and the food groups that contribute mostly to the cost of the diet. Further, periodic comparisons of changes in CotD and affordability could be used as an indicator for identifying the effect of the economic crisis on the food consumption patterns of the population.

The CotD approach can also be used to model the effect of social safety nets on the affordability of a nutritious diet and thus could serve as an advocacy tool to assess the comparative cost-effectiveness of various potential nutrition interventions and strategies by identifying the minimum cost of a nutritious diet.

In geographical locations where CotD is high, affordability is low and nutrition status is low, targeted food-based interventions such as fortification, supplementation, improved market access or non-food interventions such as supporting income generation methods or cash incentives to improve affordability could be introduced. In areas where CotD is low, affordability is high and nutrition status is still low, interventions targeted to educate people on nutritious diet intake, preparation and behavioural change could be introduced.



METHODOLOGY



- Routine collection of price data from Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI)
- Four-member typical family (school-going child (7 years), adolescent girl (14 years), adult woman and adult man)
- All 25 districts were included

- CotD (Energy only and Food Habits Nutritious Diets/ Nutritious Diets) was calculated for the each district using routinely collected locally available food price data of HARTI.
- National weighted average of CotD was calculated, applying population weight to the district figures of CotD.
- For calculation of affordability, food expenditure data of the HIES survey of 2019 were inflated to year 2022. A correction factor was calculated based on the WFP survey, August-2022 and applied to calculate the inflated food expenditure of HIES and the same factor was applied in the calculation of district food expenditure values; this estimated food expenditure was used for affordability calculation.
- National weighted average of affordability was calculated, applying population weight to the district figures of affordability.



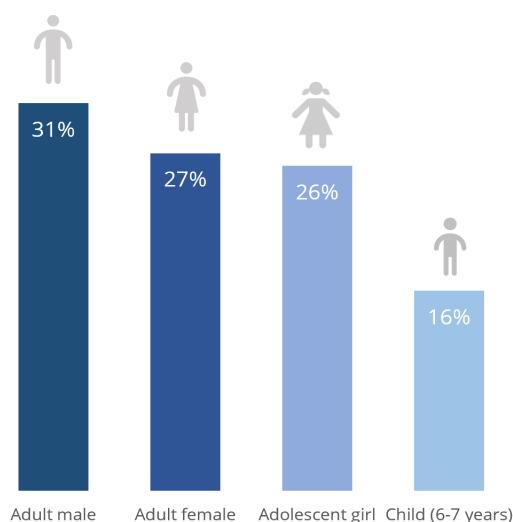
Results

Cost of Energy-only diet

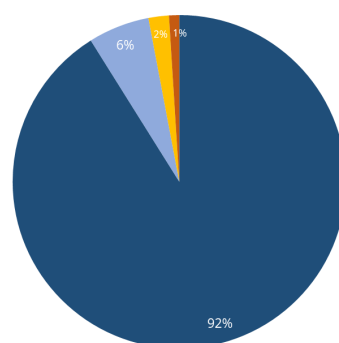
The average cost of an energy-only diet is LKR 468 per household per day.

The cost of an energy-only diet is highest in the Colombo District (LKR 487/day). The lowest cost of energy only diet is observed in Puttalam and Trincomalee districts (LKR 234).

The composition of energy only diet consists of energy dense foods, mainly representing 1-2 food groups.



Cost of Energy-only diet by age



- Grains and grain based products
- Oils and fats
- Sugars and confectionary
- Legumes, nuts and seeds

Cost of energy-only diet by food categories

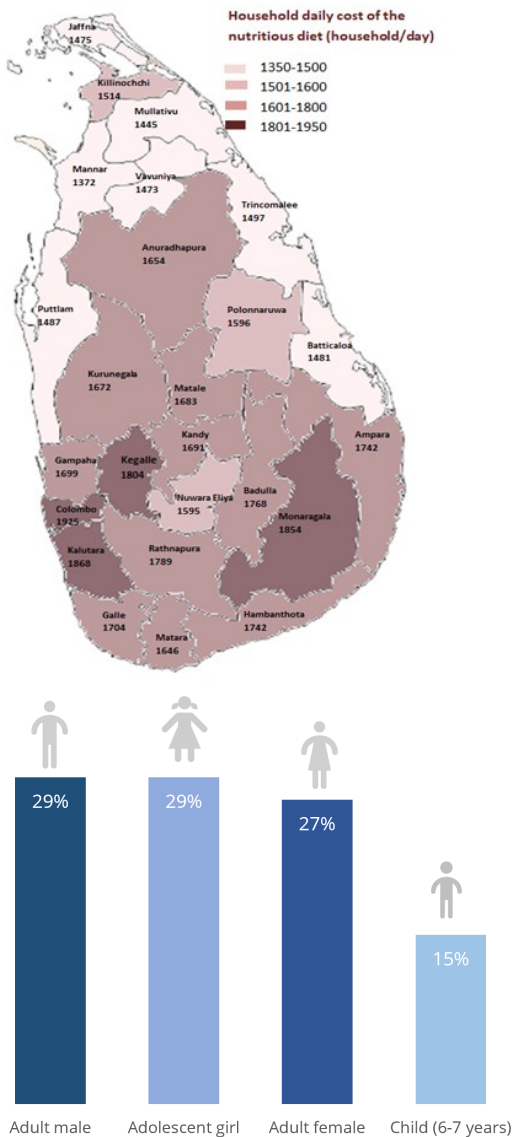
Source: CotD of Diet analysis -2022

AFFORDABILITY OF ENERGY - ONLY DIET

On average more than 98% of the population can afford an energy-only diet. However, non-affordability of energy only diet is the highest in Badulla (4%), Matara (3%), Monaragala (3%), Nuwara Eliya (3%), Vavuniya (3%) and Kegalle (3%).

Cost of nutritious diet

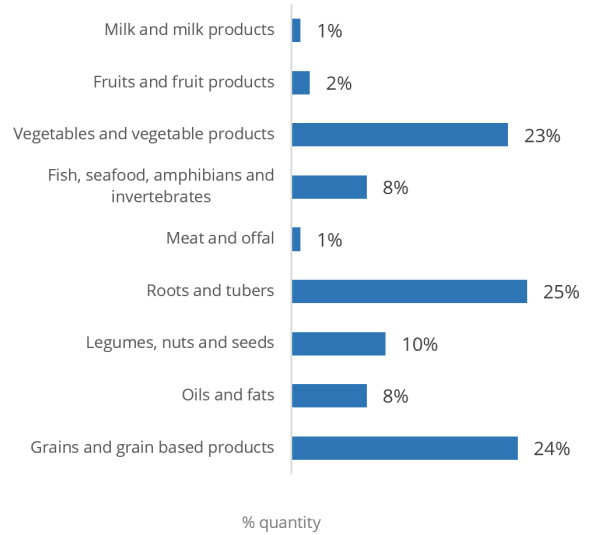
The average cost of a nutritious diet is LKR 1,707 per household per day. The cost of a nutritious diet is the highest in Colombo District (LKR 1,925) while the lowest in the Mannar District (LKR 1,371).



Cost of nutritious diet by age

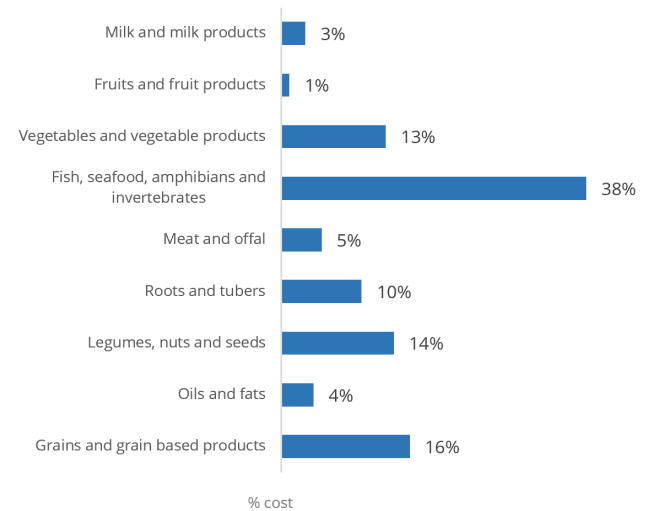
Source: CotD of Diet analysis- 2022

Composition of nutritious diet by food group



A nutritious diet consists of nutrient-dense and staple foods, with the representation of >5 food categories. Animal-source food has the highest cost portion for food categories.

Cost of nutritious diet by food group



Pulses, meat and offal, egg, fish and sea food, milk and dairy collectively contain 67% of the total cost of a nutritious diet. Cereal and tubers which contain a larger share of the food quantity, contribute only to a smaller proportion.

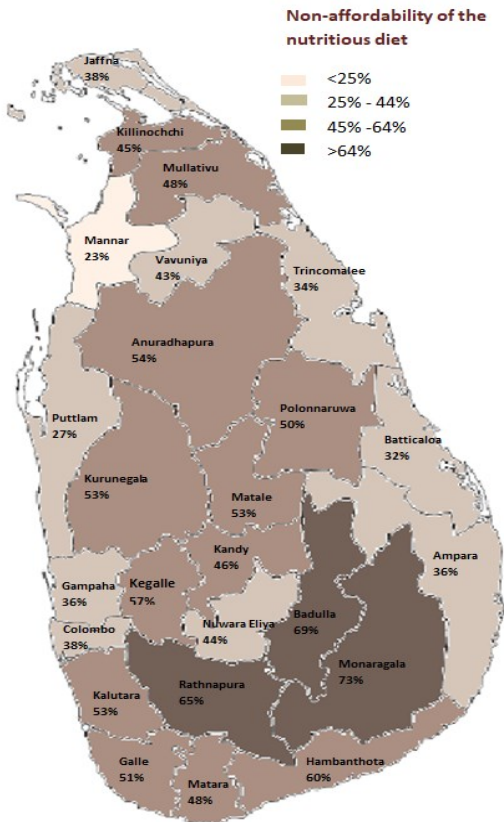
Source: CotD of Diet analysis - 2022

FOOD ITEMS SELECTED FOR NUTRITIOUS DIETS IN SELECTED DISTRICTS

District	Cereals	Pulses	Vegetables	Meat	Fish	Oil & fats	Fruits	Roots & tubers
Ampara	Rice (raw white)	Cowpea, Dhal	Gotukola, Bitter gourd, Kankun, Okra, Mukunuwenna	Beef	Catfish, Dried fish, Sardinella, Shrimps	Coconut, Palm Oil		Cassava, Potato, Sweet potato
Anuradhapura	Rice (raw white)	Cowpea, Dhal	Bitter gourd, Kankun, Okra, Mukunuwenna, Radish		Catfish, Dried fish, Sardinella	Coconut, Palm Oil	Avocado, Papaya	Cassava, Potato, Sweet potato
Badulla	Rice (raw white), Rice(raw red)	Cowpea, Dhal, Black gram	Cabbage, Kankun, Mukunuwenna, Okra, Radish		Catfish, Dried fish, Sardinella, Shrimps	Coconut, Palm Oil	Avocado, Papaya	Cassava, sweet potato
Batticaloa	Rice (raw white), Rice(raw red), Samba	Cowpea, Dhal	Cabbage, Gotukola, Kankun, Mukunuwenna, Green chilli, Radish	Beef	Catfish, Dried fish, Sardinella, Shrimps	Coconut, Palm Oil	Ambul banana, Papaya	Cassava, Potato, Sweet potato
Colombo	Rice (raw white), Samba	Cowpea, Dhal	Kankun, Mukunuwenna, Okra, Capsicum		Catfish, Dried fish, Sardinella	Coconut	Avocado	Cassava, Potato
Galle	Rice (raw white), Rice(raw red), Nadu	Cowpea, Dhal, Black gram	Drumstick, Okra, Bitter gourd, Kankun, Radish, Mukunuwenna		Catfish, Dried fish, Sardinella	Coconut, Palm Oil, Magarine	Ambul banana, Papaya	Cassava, Potato, Sweet potato
Gampaha	Rice (raw white)	Cowpea, Dhal	Gotukola, Mukunuwenna		Catfish, Dried fish, Sardinella	Coconut, Palm Oil	Avocado	Cassava, Potato
Hambanthota	Rice (raw white), Rice(raw red), Nadu	Cowpea, Dhal	Beans, Okra, Drumstick, Radish, Kankun, Mukunuwenna		Catfish, Shrimps, Sardinella	Coconut, Palm Oil	Ambul banana, Papaya	Cassava, Potato
Jaffna	Rice (raw white), Rice(raw red), Samba, Nadu	Cowpea, Dhal, Black gram, Green gram	Ash plantain, Gotukola, Okra, Kankun, Mukunuwenna, Radish		Catfish, Dried fish, Sardinella	Coconut, Palm Oil	Ambul banana, Papaya	Cassava
Kalutara	Rice (raw white)	Black gram, Chickpea, Dhal	Drumstick, Bitter gourd, Kankun, Mukunuwenna, Okra		Catfish, Dried fish, Sardinella	Coconut, Palm Oil, Magarine	Papaya	Cassava, Potato
Kandy	Rice (raw white), Samba	Cowpea, Dhal, Black gram	Cabbage, Gotukola, Bitter gourd, Kankun, Mukunuwenna, Okra	Beef	Catfish, Dried fish, Sardinella, Shrimps	Coconut, Palm Oil	Avocado, Pineapple	Cassava
Kegalle	Rice (raw white)	Cowpea, Dhal	Gotukola, Kankun, Mukunuwenna, Okra, Capsicum		Catfish, Dried fish, Shrimps	Coconut, Palm Oil	Avocado, Pineapple	Cassava, Potato

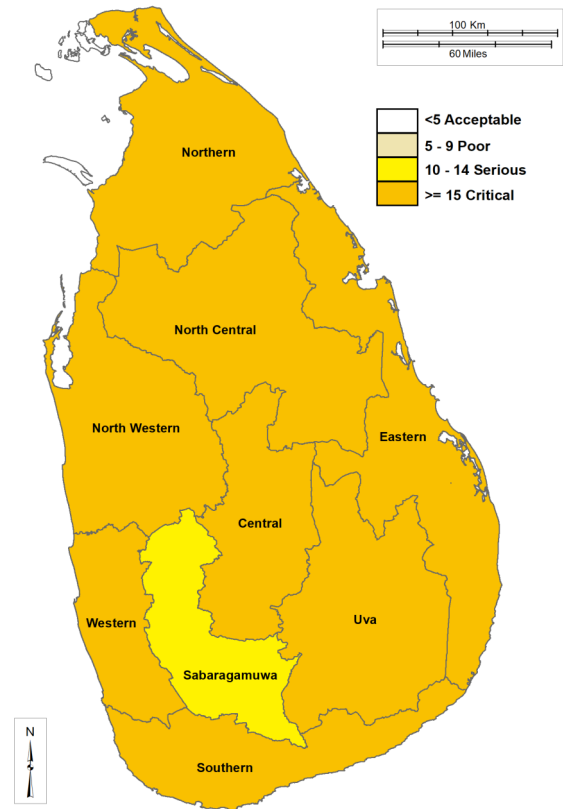
NON-AFFORDABILITY OF NUTRITIOUS DIETS AND DISTRIBUTION OF WASTING

Non-affordability of nutritious diets



Source: CotD of Diet analysis - 2022

Distribution of wasting among children under five years of age



Source: Demographic and Health Survey - 2016, Sri Lanka



CONCLUSIONS

- A nutritious diet (MCNut) is over 3.5 times more expensive than a diet that meets only energy needs (MCCal) in Sri Lanka in year 2022.
- In year 2022 the inflation of animal protein sources was recorded as : Overall price inflation of animal protein sources– 28% , Egg price inflation– 112%, Fish price inflation –69%.
- Forty seven percent (47%) of the population cannot afford a nutritious diet in year 2022. However, 98 % of the population had affordability to energy only diet. In the estate sector, 98% could afford energy only diet. A nutritious diet was out of reach, for nearly half (46%) of HH in the rural sector and two-thirds of HH in the estate sector . Across residential sectors, the estate sector was the most vulnerable.

Recommendations

- The study recommends short-term nutrition-sensitive social protection programs for the most vulnerable.
- Further analysis on policy interventions is to be combined with long-term development perspectives that raise economic access and nutritional inclusion of the most vulnerable.

Limitations

The intra-household distribution of foods (within household members) may be unequal and was not taken into account in the analysis. Depending on the foods available and their cost, the software may not include animal sourced foods if nutrients can be obtained from plant-based foods at a lower cost.

Research Team

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