The Cost of the Diet tool Reveals that Two-Thirds (68%) of Pakistan’s households would be Unable to Afford a ‘Nutritious Diet’

**The Context**

This case study describes the Government of Pakistan’s (GoP) use of the Cost of the Diet (CotD) tool in 2016 through the Fill the Nutrient Gap (FNG) analysis. At that time, the most recent DHS survey (2011) revealed that 43.7% of children under five were stunted (an indicator of chronic malnutrition) and 15.1% were wasted (an indicator of acute malnutrition), both classified by the WHO as ‘very high’ prevalence.

These prevalence rates were only nominally better than those from the prior decade; and with Pakistan ranking the sixth largest country in the world, (at more than 180 million people), they translate to staggering numbers of malnourished children, e.g. 10.5 million children stunted.

The Cost of the Diet (CotD) Software analyzes the amounts, combination, and cost of diets that would meet nutrient needs for a model household at the lowest cost. CotD uses linear programming to find optimal combinations of locally-available foods that would meet macro- and micronutrient needs for households, and specifically targeted nutritionally-vulnerable household members, e.g. adolescent girls.

This cost can then be compared to population-level economic data, such as from Household Consumption and Expenditure Surveys, to estimate the proportion of households that would actually be able to afford a nutritious diet. This analysis, combined with the examination of secondary data as part of the FNG, helps to identify factors that determine diet access, whether physical, economic or behavioral.

The CoD tool can also be used to model the potential impact of health, agricultural and social-protection interventions on the cost and affordability of nutritious diets.

The CotD tool was developed by Save the Children U.K. and the updated version can be downloaded free of charge at the following link: https://www.heacod.org/en-gb/Pages/SWCotD.aspx

More information on the FNG process can be found on the WFP https://www1.wfp.org/publications/2017-fill-nutrient-gap

Details on the FNG and CotD processes in Pakistan can be found in the https://www1.wfp.org/publications/2017-fill-nutrient-gap-pakistan
There are many challenges to improving the nutrition situation in Pakistan. Among them is the extreme diversity of realities across the large country; the complexity of policy frameworks (since devolution of authority to the provinces in 2010); the fact that nutrition is seen by many as principally a technical and health sector issue, (leading to minimal multi-sectoral engagement); and finally, a lack of harmonization with national policy development activities.1

In 2016, the FNG process was initiated in Pakistan to facilitate greater understanding of the provincial malnutrition contexts, and to strengthen and align actions at national and provincial levels. Along with secondary data analysis, the FNG made use of the Cost of the Diet (CotD) tool to understand context-specific barriers to adequate nutrient intake, and to model potential interventions to improve access to more nutritious diets.

The Policy Questions

In Pakistan, the FNG was carried out separately for four provinces (Balochistan, Khyber Pakhtunkhwa (KPK), Punjab and Sindh), as well as Islamabad Capital Territory (ICT). Each analysis sought to address the following key questions:

1. What are the barriers to adequate nutrient intake?
2. What would be the cost and content of a diet for model households (HHs) and for specific members of the HHs (breastfed child, lactating woman, etc.) using locally available foods and appropriate portion sizes at the lowest cost?
3. What proportion of the population would be able to afford a nutritious diet?
4. What combination of nutrition-specific and nutrition-sensitive interventions across sectors could improve access to nutritious diets?2

The Process

The FNG process was led by the National SUN secretariat, housed within the Ministry of Planning, Development and Reform (MPDR). Representatives from the National Government, UN agencies, NGOs and other stakeholders also participated and assisted in deciding upon the level of analysis, data sources, and possible interventions that would be tested using the CotD modelling tool.

The CotD analysis drew on secondary data from the 2013-2014 Pakistan Household Integrated Economic Survey (HIES) to estimate food prices, seasonal food availability and average HH size, in each of the provinces. Model HHs were composed of six to eight members, including a breastfeeding child, school-age child, adolescent girl and lactating mother, in order to consider diet access for these nutritionally vulnerable target groups and test the potential of interventions directed at these groups.

Analysis was conducted to estimate the cost and content of a HH-level ‘staple-adjusted nutritious diet’. This is based on the minimum cost nutritious diet that contains a daily serving of the main staple; meets recommended intakes for energy, protein, fat and 13 micronutrients; and constrains for any foods that would be taboo for one or more HH member. In Pakistan, at least one daily serving of non-fortified wheat (atta) flour was included (as the staple food) for all HH members, except for the breastfeeding child (12-23 months), and no taboo foods were identified.

Once the cost and content was estimated, the distribution of reported ‘per capita food expenditure’ from the HIES was used to estimate the proportion of the population that would not be able to afford the nutritious diet, and allowing the level of ‘non-affordability’ (of the nutritious diet) to then be compared across provinces, seasons, and between urban and rural contexts.

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1 Fill the Nutrient Gap - Pakistan Summary Report, November 2017
2 Nutrition-sensitive interventions are interventions of other sectors (e.g. agriculture, social protection, etc.) that incorporate nutrition objectives.
Finally, the CotD software was used to model a range of interventions, suggested by stakeholders, testing for their potential to improve affordability of the nutritious diet. The following list of interventions (to be modeled) was decided during the FNG stakeholder consultations:

- Increased availability of local nutritious (unfortified) foods and biofortified foods
- Different types of complementary foods or specialized nutritious foods (SNF) made available through the markets and/or social safety nets
- Micronutrient supplementation
- Fortification of staple foods
- Conditional cash transfers for vulnerable HHs

The CotD analysis findings were fed back into the larger FNG process during multi-sectoral workshops held between March and April of 2018. Workshops were chaired by provincial SUN secretariats in Karachi, Quetta, Lahore and Peshawar and sector-specific interventions and short, medium and long-term actions were decided for each target group. Finally, a national workshop was held in Islamabad, where decisions were made on how to support and strengthen those provincial-level interventions.

Results

The CotD analysis estimated that a diet that met ‘energy requirements only’ for a model household would cost between 16.6 and 31.2 Pakistani Rupees (PKR) (USD $0.12-$0.25) per day. In contrast, a nutritious diet, meeting the requirements of energy, protein and 13 micronutrients would cost up to 350% as much at 68-79PKR per day (USD $0.50-$0.60).

The fact that the CotD analysis was able to model nutritious diets using locally-available foods in all four provinces across different seasons indicated that ‘food availability’ was not a significant barrier to consuming a nutritious diet. Instead, the CotD analysis found that ‘access’ (i.e. affordability) was a significant barrier, with more than two-thirds of HHs nationally (68%) unable to afford the ‘nutritious diet’ modelled to meet requirements of energy, protein and 13 micronutrients. This estimate (of ‘unaffordability’) ranged from 65% of HHs in Punjab, to 83% of HHs in Balochistan (see bar chart below).
Other key findings included:

- The cost of a nutritious diet was higher in summer months, for all provinces. It was also higher in urban areas in KP, Sindh and Punjab, and in rural areas in Balochistan.

- The nutrient requirements of adolescent girls were the most expensive to meet within all HHs, (32% of the average HH diet cost), due to the increased needs for essential nutrients during this life cycle period, and the cost and availability of local foods containing these nutrients, see pie chart above.

- Household non-affordability of the nutritious diet was positively correlated (0.902) with the prevalence of chronic malnutrition.

- The primary ‘limiting nutrients’, i.e. nutrients whose requirements are difficult to meet using local foods, were those largely derived from animal source foods: calcium, iron and vitamin B12. Calcium and iron were limiting nutrients for all HH members; and vitamins A, C, B1, B12 and pantothenic acid were problems for lactating women and breastfeeding children aged 12–23 months. The challenge of meeting requirements for these nutrients increases the costs of a nutritious diet.

- The CotD analysis identified a number of foods as rich, relatively inexpensive sources of nutrients. These were milk (or buttermilk), eggs, various pulses, millet flour, vegetable ghee, orange-colored fresh vegetables and local fruit.

- CotD was also used to model the extent to which a range of interventions (listed on page 3) could improve access to nutritious diets, either through improving the availability of nutritious foods and nutrients, or by improving access to these foods in terms of price or purchasing power. This exercise revealed that:
  - Improved access to fresh nutritious foods (animal source foods and vegetables), through market vouchers or home production, was the most effective intervention to reduce the cost of meeting nutrient needs for adolescent girls.
  - Provision of SNFs was the most effective intervention to reduce the cost to meet nutrient needs for children 6–23 months and pregnant and lactating women.
  - Staple food fortification, as per the proposed national guidelines, is useful, but not enough in isolation to meet the nutrient needs of key vulnerable groups.
  - Cash transfers could contribute to improving economic access to nutritious diets, but would need to be accompanied by effective demand creation strategies to ensure that the money is spent on nutritious foods.

Given that no single intervention was enough to significantly reduce the cost of a nutritious diet, the most effective interventions were combined into HH packages, which were further tested in combination with cash transfers of PKR 1,500–2,000 (13.25–19 USD) per month. The results show that a combined HH package of targeted interventions, including SNFs and local nutritious foods, plus a cash transfer, had the greatest impact on affordability of a nutritious diet at the HH level, across all provinces.

Use of the Results

The details of these intervention packages, along with the policies and programs that would create an enabling environment for them to be effective, were discussed during the provincial and national FNG workshops in March and April of 2019. These discussions led to a proposal to include the provision of SNF for key target groups in the National Social Safety Net Program, and to pilot this activity in two provinces. It also led to ongoing advocacy, to both government and non-government institutions, to prioritize multi-sectoral interventions that address the affordability of a nutritious diet.
Challenges to using the CotD in Pakistan

Pakistan is a large, diverse country experiencing recent social and political change. Prior to the analysis, responsibilities for multi-sectoral interventions that could influence nutrition were devolved to the provinces. In contrast to this, coordination for nutrition as an issue, which is led by the SUN, occurs at a national level (from Islamabad). This means that there can often be a ‘disconnect’ between decisions made nationally, and translation to province-level actions and policy.

Further, Pakistan is undergoing a period of rapid population growth and urbanization. Karachi, for example, was the fastest growing city in the world between 1998 and 2011. Data collection and efforts to understand the dynamics of malnutrition within urban areas, especially urban slums, is not keeping up with this rapid growth. Meanwhile, much of the national and international nutrition community continues to take a traditional approach of focusing primarily on malnutrition in rural areas. As a result, urban malnutrition does not receive the attention it needs, and the attention it does receive is not well informed by evidence. Poor availability of data (of the urban experience) meant that the FNG / CotD could not adequately address this growing issue.

Opportunities and Unexpected Benefits

Prior to the FNG, many actors in the nutrition field in Pakistan believed that behavior change interventions were the key to improving diets among vulnerable populations. While the FNG secondary data analysis indeed confirmed that practices were inadequate (particularly regarding Infant and Young Child Feeding), the CotD results revealed that economic access was the primary barrier to nutritious diets, a crucial point with regards to advocacy and intervention prioritization.

Finally, the CotD finding that no single intervention was enough to significantly reduce the cost of the diet reinforced the idea that coordinated delivery of a package of interventions, across multiple sectors, is crucial to improving affordability for vulnerable HHs. Having strong representation from these different sectors throughout the FNG process facilitated learning, planning and action towards reducing malnutrition in Pakistan.

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