Indonesia Health Sector Review

Indonesia: Facing up to the Double Burden of Malnutrition

The Double Burden of Malnutrition and Its Consequences

A concept first presented just over a decade ago, the DBM is the coexistence of undernutrition and overnutrition of macronutrients and micronutrients across the life course in the same population, community, family and even individual. Of particular concern is the life-course dimension of the DBM, or the link between maternal and fetal undernutrition and increased susceptibility to overnutrition and diet related non-communicable diseases (NCD) later in life.

The DBM is a global problem that affects rich and poor countries alike: 25% of the world’s population is overweight, while 17% of pre-school children are underweight and 28.5% are stunted, 40% of women of reproductive age have anaemia, and one-third of the global population still suffers from iodine deficiency. Most lower-middle-income countries (LMICs) are considered to be affected by the DBM, with overweight increasing faster than underweight is decreasing in most of them. While obesity has doubled globally in the last three decades, it has tripled in LMICs in just two decades.

The consequences of the DBM are grave and manifest across the life course. Overall country development, improved water and sanitation practices, and increased vaccine coverage mean that more children are likely to survive their first two years of life, even if they have suffered undernutrition. For those that survive this critical period, however, the damage done by this early interval of undernutrition is seen throughout the life course. When this stunted length growth is followed by accelerated weight growth later in life, there is an increased risk for obesity and other diet-related NCDs, such as Type 2 diabetes and cardiovascular disease, later in life. NCDs are responsible for the majority of deaths worldwide, and are disproportionately high in LMICs, where nearly 80% of all NCD deaths occur.
Indonesia’s DBM problem is urgent

There is evidence of overweight and underweight among young children, indicating that the DBM is already a concern in Indonesia. Stunting is the principal nutrition concern, a fact made more troubling given the links between early stunting and the risk of non-communicable diseases (NCD) later in the life course, which are now the majority of the disease burden in Indonesia. This link between stunting and NCDs is not yet well understood or addressed by health workers and policy makers.

Traditionally, Indonesia has prioritized undernutrition, paying special attention to “Gizi Buruk” or severe underweight as a way to judge the national nutritional situation. However, by this measure alone, nutritional issues appear largely resolved, as the prevalence of giziburuk is just 5.4% in children under-five. That 36% of children under five are stunted is of greater concern given the lifelong consequences (see Table 1).

The Indonesian Family Life Surveys, representative of 85% of the population, indicate that over a fifteen year period, the proportion of thin men and women decreased considerably while the proportion of “gemuk” (obese/overweight) men and women nearly doubled. This suggests that underweight is declining and overweight is increasing in Indonesian adults, much like it is in Indonesian children, where rates of “Gemuk” in the younger children (<5y) are greater than in the older ones (6-12y) while preschool child underweight rates have fallen at double the rate of stunting over the last two decades. This is a trend similar to that seen in most other LMICs. Maternal undernutrition and micronutrient deficiencies also contribute to the malnutrition situation in Indonesia (see Figure 1).

<table>
<thead>
<tr>
<th>Malnutrition Category</th>
<th>&lt; 5 year</th>
<th>6 - 12 year</th>
<th>13 - 15 year</th>
<th>16 - 18 year</th>
<th>&gt; 18 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stunted</td>
<td>35.6</td>
<td>35.5</td>
<td>35.1</td>
<td>31.2</td>
<td></td>
</tr>
<tr>
<td>Wasted</td>
<td>13.3</td>
<td>12.2</td>
<td>10.1</td>
<td>8.9</td>
<td>12.6</td>
</tr>
<tr>
<td>“Gemuk”</td>
<td>14.0</td>
<td>9.2</td>
<td>2.5</td>
<td>1.4</td>
<td>21.7</td>
</tr>
</tbody>
</table>

Source: Riskesdas 2010

FIGURE 1: PERCENTAGE OF OVERWEIGHT AND UNDERWEIGHT IN MEN AND WOMEN OVER 45 YEARS OF AGE IN INDONESIAN FAMILY LIFE SURVEYS
However, despite the evidence that shows obesity is on the rise, misperceptions of the issue tend to cloud the urgency of the problem. For example, in many circles, it is assumed that obesity is exclusively a problem for the rich. This is not the case. In fact, while obesity increases with income, the largest volume of obesity is concentrated in the poorer wealth segments of the population, and conditioned by increasing obesogenic urban environments. The poorest adults in these environments who are also the most stunted are particularly vulnerable.

Another misperception concerns the physical nature of obesity, as this often calls to mind someone who is “fat.” Gemukness, however, is a hidden problem. In Indonesia, even those that do not appear “fat” are carrying a large amount of fat in their bodies – as much as twice the amount of body fat than a Caucasian of the same body shape. This is in part a result of constrained growth in the first 1000 days followed by accelerated growth during childhood, perpetuated by urban lifestyles. Further, for Indonesians, the health risks associated with having excess body fat begin at a Body Mass Index (BMI) lower than that of even other parts of Asia, and certainly lower than the international standard. That this excess fat is not always physically evident contributes to an underestimation of the urgency of the problem in this increasingly urbanized population.

Geographically, the national averages hide massive variability across the country, but the level of high gemukness in the outer islands where maternal and child undernutrition rates are the highest offers further evidence of the links between constrained early growth and increased weight gain across the life course. For example, in three provinces (Riau, Bengkulu and Sulawesi Tengara) both young child wasting and gemuk rates are over 15%. Adult gemukness is over 15% in all provinces except one (NTT) and is over 25% in eight (Sumatra Barat, Bangka Belitung, Kepulauan Riau, Kalimantan Timur, Sulawesi Utara, and Gorontalo, Maluku and Maluku Utara). Taken together, while Java has the greatest concentration of gemukness due to its population size, the DBM problem appears to be of greater proportion in the outer islands.

Assessing the Causes of the DBM in Indonesia

While the causes of DBM across the life course are complex, our assessment analyzed the DBM in Indonesia using a system map of obesity developed by the Foresight Project in the UK, which groups more than 100 variables into four thematic areas:

1. **Health and Biological Environment**
   - The influence of diseases and genetics

2. **Economic and Food Environment**
   - The influence of availability and quality of food near to the home; economic access to food which influences consumption

3. **Physical and Built Environment**
   - The influence of individual activity behavior

4. **Socio Cultural Environment**
   - The influence of media, education, peer pressure and culture

![FIGURE 2: CAUSES OF DEATH (%) IN INDONESIA (1995-2007)](image)

1 Obesogenic environments refer to the role environmental factors may play in the development of obesity either through decreased exercise and/or increased energy intake. It is defined as “the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals and populations.” Swinburn, B. and Figger, G. 2002. Preventive Strategies against Weight Gain and Obesity. Obesity Reviews, 3:289-301.

2 Although obesity increased with income, peaking at 23.2% in the upper wealth quintile, the lower wealth quintiles were also affected (between 15 – 19.9%).

3 BMI is calculated from a person’s weight and height, and provides an indication of one’s body fat.
1. **Health and biological environment.** Indonesia is well on its way in its demographic transition. Life expectancy has improved and more people have access to primary health services, thanks to Indonesia’s prioritization of primary health care, increased expenditures for health, and a spate of health policies in the eighties and nineties that led to better distribution of health facilities throughout the country. This aging population in turn is influencing the subsequent epidemiological transition, and the changing age structure has contributed to a shift in the burden of disease from infectious diseases to NCDs. Today, NCDs account for the majority of disability and mortality (60%) in Indonesia. Cardiovascular disease a leading cause of death (30% of all NCD deaths, followed by cancer, chronic obstructive pulmonary disease, and diabetes) (see Figure 2).

However, sanitation coverage has not proceeded apace, and gastrointestinal parasites are still very common, both of which are likely contributors to maternal anemia. Further, despite improved access to primary care, the health system overall is not well-equipped to implement nutrition interventions, due in part to health workers’ lack of perception of stunting and obesity/overweight as problems.

Increased cardiovascular diseases are reflected in blood analyses that show high blood pressure and high cholesterol levels, with low levels of HDL cholesterol, which is often protective against cardiovascular disease. There is a high prevalence of hypertension, which is worse in women and increases with age. Half of all adults are probably hypertensive. There is no evidence in Indonesia that genetics is a contributor to the growing obesity problem (see Figure 3).

2. **Economic and food environment.** Indonesia’s increase in national wealth has been accompanied by declines in poverty and an increase in food availability as energy per capita, mostly coming from fat doubling. Rice availability remained mostly stable while energy coming from meat and fish doubled, from milk tripled, and from wheat increased six-fold. Simultaneously, the increased global trading of foods has led to increasing amounts of processed food imports in LMICs, which are distributed mainly through growing supermarket chains and multinational fast-food companies. Urban areas are particularly affected by these new commercial outlets.

An increasing body of evidence suggests that food consumption patterns during early life affect the rest of the life course. Unfortunately, infant and young child feeding practices in Indonesia are far from adequate and contribute both to undernutrition early in life as well as to an increased risk for overnutrition later in life. Harmful patterns include declining rates of exclusive breastfeeding, and early introduction of complementary foods. Despite government efforts to encourage exclusive breastfeeding, breastfeeding efforts continue to deteriorate, with only 15% of babies breastfed exclusively for 6 months as reported in 2010 – half of the 32% reported in 2007 and much less than the 40% reported in 2002.

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**FIGURE 3 : HYPERTENSION IN ADULTS FROM THE 2007 INDONESIA FAMILY LIFE SURVEYS**

**TABLE 2 : FOOD GROUPS DEFINED BY DEGREE OF PROCESSING**

<table>
<thead>
<tr>
<th>Group</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>Unprocessed or minimally processed foods, such as fruits and vegetables</td>
</tr>
<tr>
<td>Group 2</td>
<td>Processed culinary or food industry ingredients, such as vegetable oils, butter, flours, and raw pastas</td>
</tr>
<tr>
<td>Group 3</td>
<td>Ultra-processed foods, such as “convenience foods” that require little if any preparation; most suited to snacking</td>
</tr>
</tbody>
</table>
Food consumption patterns later in the life course are more difficult to evaluate, but data available suggest increases in food intake, particularly from meat, fish, egg, and prepared foods, suggesting that food consumption has not only increased quantitatively, but from more expensive items such as meat and food consumed outside the home. Vegetable and fruit consumption has remained stable and low. Aside from the quantity, more research is needed to better understand the quality of the diet.

However, it is likely that the increased consumption of “Group 3” ultra-processed foods (Table 2) as compared to a more proportional balance with other less processed food groups is a likely contributor to the obesity problem in Indonesia and around the world. Group 3 foods, energy dense and full of refined grains and sugars and fats, are well recognized as the lowest cost option to the consumer. An example of this in the Indonesian context may be instant noodles.

3. **Physical/build environment.** An assessment of Indonesia’s physical environment reveals an urban environment that is fairly unfriendly to pedestrian physical activity. In addition, given the limited access to healthy food in many urban environments, those traveling to and from school and work have few options other than ready-made foods outside of the home. At present and particularly given a low public awareness of the DBM problem, schools are not yet a venue for preventing child obesity. It is unclear where children buy their food, but likely some 35% comes from street vendors; regulating this to ensure children eat more healthily is a challenge that should be better addressed.

Urban planning and local government have an important role to play in increasing options for pedestrian physical activity as the majority of the population does not get enough exercise to help prevent cardiovascular disease. Riskesdas data from 2007 show school aged children are one of the most inactive age groups (see Figure 4).

4. **Socio cultural environment.** Indonesia continues to retain much of its culture even while immersing itself in all forms of modern media. Traditional customs influence maternal and early child undernutrition, and social norms dictate that many women get married while they are still children: 25% of all women of reproductive age are married before age 18, and 10% before age 16, likely contributing to high low birth rates, especially in the outer islands. At the same time, children watch around 4 hours of television a day, and the advertising of processed food dominates the media, with advertisements targeted toward children. The majority of parents report that their purchases are influenced by their children’s choice more than advertisements, suggesting the need to curb these external influences, as some other countries have done.

**Addressing the DBM in Indonesia**

The actions needed to strengthen the response to nutrition issues are well established and recognized under the Scaling Up Nutrition (SUN) movement, which Indonesia joined in September 2012. Focused on maternal and child undernutrition, SUN should be built upon and adopted as countries consider enhanced responses to the DBM problem, particularly as efforts to address maternal and child undernutrition are a necessary first step to prevent DBM later in the life course.

**FIGURE 4 : PREVALENCE OF INSUFFICIENT ACTIVITY IN THE INDONESIAN POPULATION ABOVE 10 YEARS OF AGE IN 2007, BY AGE GROUP**

Source: Riskesdas 2007

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4 Riskesdas 2007 reported the amount of physical activity among the population aged ten years and older, as shown in Figure 4. Inadequate physical activity was considered to be that less than 30 minutes a day of moderate activity (brisk walking) during at least five days a week.
While Indonesia has made progress in micronutrients, and has begun work to promote good nutrition practices such as exclusive breastfeeding and baby friendly hospitals, there is room for improvement in coordination for improving across sectors and within all levels of the government. An overarching DBM policy framework at the country level, such as that included below, would include actions needed by several Ministries and across four pillars: food security, food safety, healthy lifestyle, and nutrition.

Furthermore, a proposed program framework for DBM includes interventions that can contribute to the prevention and treatment of DBM across the life course. This framework builds on the table developed by Gillespie and Haddad in 2001 for reducing DBM in Asia and draws on the Lancet Nutritional Series and other more recent reviews of evidence to tackle overweight and obesity.

Many of these interventions are already being implemented in Indonesia, but while there has been progress in covering some areas, there are gaps in others. For example, implementation of direct interventions during early life, especially breastfeeding, still needs improvement. Similarly, despite advances through food fortification with micronutrients, maternal anemia needs attention. Finally, social welfare programs have helped ensure food security among the poorest of the poor, but there needs to be greater emphasis on food quality as well as quantity. Schools are a critically important venue for enabling healthy lifestyles that will help mitigate the effects of the DBM, but have not yet been utilized for this purpose. Health professionals need better training so that obesity/overweight and stunting are perceived as problems to be addressed.

### TABLE 3: THE FOUR OVERARCHING PILLARS OF DBM NUTRITION POLICY FRAMEWORK

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sustainable Food Security</th>
<th>Food Safety</th>
<th>Healthy Lifestyle</th>
<th>Nutrition Policy Pillars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td></td>
<td>• Food safety and hygiene regulations</td>
<td>• Promotion of healthy eating</td>
<td>• Micronutrient supplementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Food Inspections</td>
<td>• Promotion of exercise</td>
<td>• Nutrition education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Food standards</td>
<td>• Infection Control</td>
<td>• Dietary Guidelines</td>
</tr>
<tr>
<td>Public Works and urban</td>
<td>• Rural roads</td>
<td>• Water and Sanitation</td>
<td>• Urban bike lanes</td>
<td>• Nutritional surveillance</td>
</tr>
<tr>
<td>planning</td>
<td>• Irrigation</td>
<td></td>
<td>• Pedestrian walkways</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Food availability</td>
<td></td>
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<tr>
<td></td>
<td>(Food production)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>• School gardens</td>
<td>• Hygiene education</td>
<td>• Physical exercise</td>
<td>• Nutrition education</td>
</tr>
<tr>
<td></td>
<td>• School meals</td>
<td></td>
<td>• Life skills and sex education</td>
<td>• Anaemia control</td>
</tr>
<tr>
<td>Social Welfare/Security</td>
<td>• Food Access (cash</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>transfers)</td>
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<tr>
<td>Industry and Trade</td>
<td>• Food availability</td>
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<td></td>
<td>(manufacture and</td>
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<tr>
<td></td>
<td>marketing)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Public Information</td>
<td>• Food Standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance/economy</td>
<td>• Marketing of food to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Code of marketing of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>breastmilk substitutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Food Taxes</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
### TABLE 4: PROGRAMME INTERVENTIONS FOR TACKLING THE DOUBLE BURDEN OF MALNUTRITION ACROSS THE LIFE COURSE

<table>
<thead>
<tr>
<th>Stage of life course</th>
<th>Specific Interventions</th>
<th>Sensitive Interventions</th>
</tr>
</thead>
</table>
| Conception to birth  | • Micronutrient (Iron/ folate) supplements  
• Balanced protein energy supplements*  
• Deworming  
• Reduction of household/cigarette smoke  
• Presumptive radical treatment for malaria*  
• Insecticide-treated bed nets*  
| • Prevent child marriage and teenage pregnancies  
• Conditional cash transfer programmes (with nutrition education)  
| Young Children (0-5 years) | • Exclusive breastfeeding promotion,  
• Appropriate complementary feeding promotion  
• Hand washing and hygiene interventions  
• Young child supplementation with vitamin A and zinc, and other micronutrients as appropriate  
• Management of severe acute malnutrition  
| • Salt Iodization  
• Flour fortification  
• Oil fortification  
| Fiscal food policy;  
• Food subsidies  
• Fat/sugar taxes  
• Levies  
| Children (5-18 years) | **School based;**  
• Providing healthy meals  
• Promotion and provision of daily physical exercise  
• Weekly iron supplements/deworming  
| • Code of marketing of breastmilk substitute  
• Conditional cash transfer programmes (with nutrition education)  
| Urban planning;  
• Bike lanes  
• Parks  
• Pedestrian precincts  
• Sanitation  
• Smoke free houses  
| Adulthood (18+ years) | • Medical service provider counselling on healthy diet  
• Worksite encouragement to exercise and eat healthy foods  
• Taking regular exercise  
| • No vending machines or junk food sales in schools  
• No advertising of food aimed at children  
| Food labeling;  
• Nutrition signposting  
• Control food claims
Policy actions for consideration in Indonesia

Grouped by functional area, stage of the life course, and type of activity, the following policy actions are suggested for consideration and further in-depth discussion as well as immediate action and piloting:

Nutrition Policies and Plans
- Ensure from the earliest moment possible and practical that nutrition programmes in Indonesia become oriented towards tackling the DBM, recognizing that the first priority for doing so is to tackle the problem of stunting by improving maternal and child nutrition, largely by implementing the Lancet Nutrition Series package of direct nutrition interventions.
- Ensure that the plan for the high-level national nutrition council/forum eventually includes plans to tackle the DBM, building on current initiatives to follow through on the SUN.
- Consider ways to ensure that both the future National Plan for Development (RPJMN) and National Action Plan for Food and Nutrition (RANPG) adequately contemplate the DBM.

Maternal, Infant and Young Child Nutrition
- Strengthen the mechanisms already in place and ensure the enforcement of the Code of Marketing of Breastmilk Substitutes so that infants are no longer given breastmilk substitutes by health professionals, especially at the time of birth.
- Strengthen efforts to improve diets of young children through home-fortification, fortification of complementary foods, and/or animal source foods as appropriate.
- Further strengthen all efforts to control the multiple micronutrient deficiencies that continue to assail mothers and young children especially, through fortification and/or through supplementation. As a short term measure until sanitation levels improve, introduce deworming during pregnancy as recommended by WHO to help control maternal anaemia.

Food and nutrition security
- Strengthen aspects of agricultural policy in order to promote vegetable and fruit production through small scale local farmers, not only to improve quality of food availability but also to improve incomes among the rural poor, so that both food security and nutrition security are ensured.
- Strengthen all social welfare programmes for mothers and young children by ensuring conditionality of cash transfers as well as linkages to the promotion of high nutritional cash crops such as fruits and vegetables, which could/should be provided by small scale local farmers through local farmers markets.

Nutrition Education and Healthy Life Styles
- As a first priority for dealing with the “stunting-obese-NCDs” problem, develop extensive and effective nutrition education throughout the country for students, academicians, government officials, politicians, the food industry, and the general public.
- Make plans to make all schools “nutrition friendly” schools (including adaptation of the curriculum), starting in 2013 with pilot initiatives in at least five provinces, building on current efforts through PMTAS, Indonesia’s feeding program for school children.
- Ensure that all capacity building efforts to strengthen nutrition professionals and health service staff fully contemplate the DBM.
- Introduce national regulations to reduce the impact on children of marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt, in function of the policy recommendation of World Health Assembly resolution WHA63.14. Advertising of any food to children through any media should be banned and infractions punished.
- Take measures to ensure that future urban planning initiatives are more “exercise friendly” by including more bike lanes, pavements, pedestrian precincts and parks.

Research
- Develop models to estimate the economic and fiscal impacts of the DBM across the life course.
- Explore the potential for and possibilities of introducing taxes on imported food commodities that benefit from subsidies in the country of origin, as well as taxes on selected fast foods such as high sugar drinks, that are particularly obesogenic.
- Investigate the fat content of the national diet including the quality of the fat (how much is saturated and how much is poly-unsaturated), as well as the amounts and sources of trans fats being consumed.
- Initiate national level nutrition surveys to ascertain the situation with regard to micronutrient status, especially for iron deficiency anaemia, and iodine, vitamin A and zinc deficiencies.