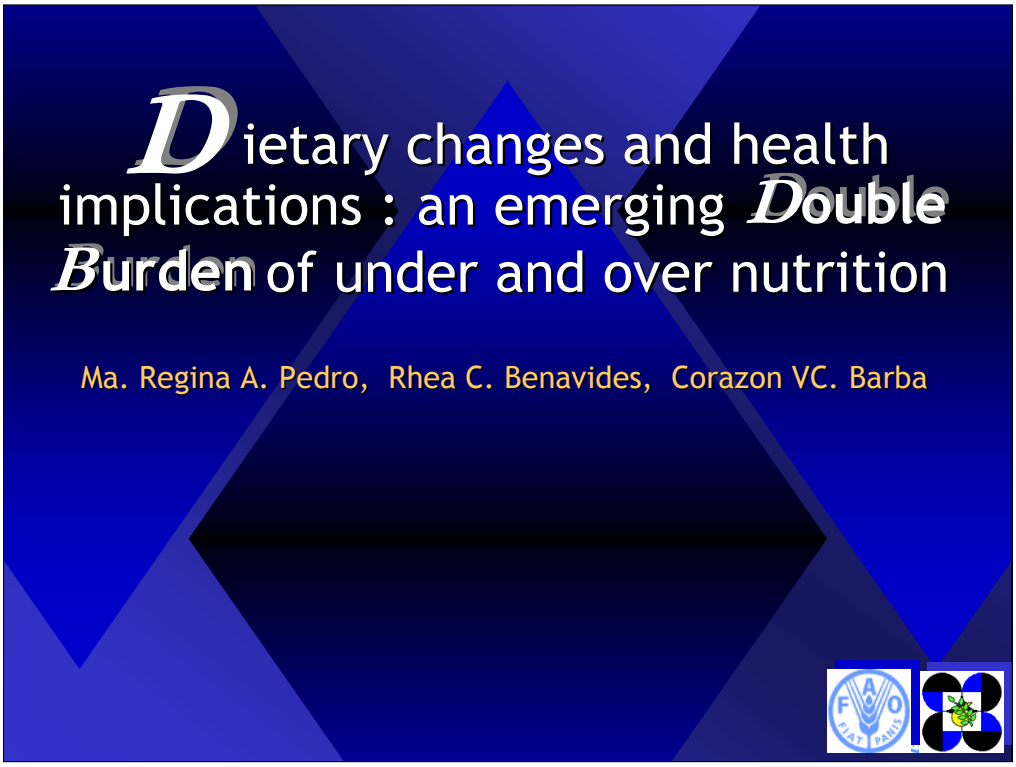
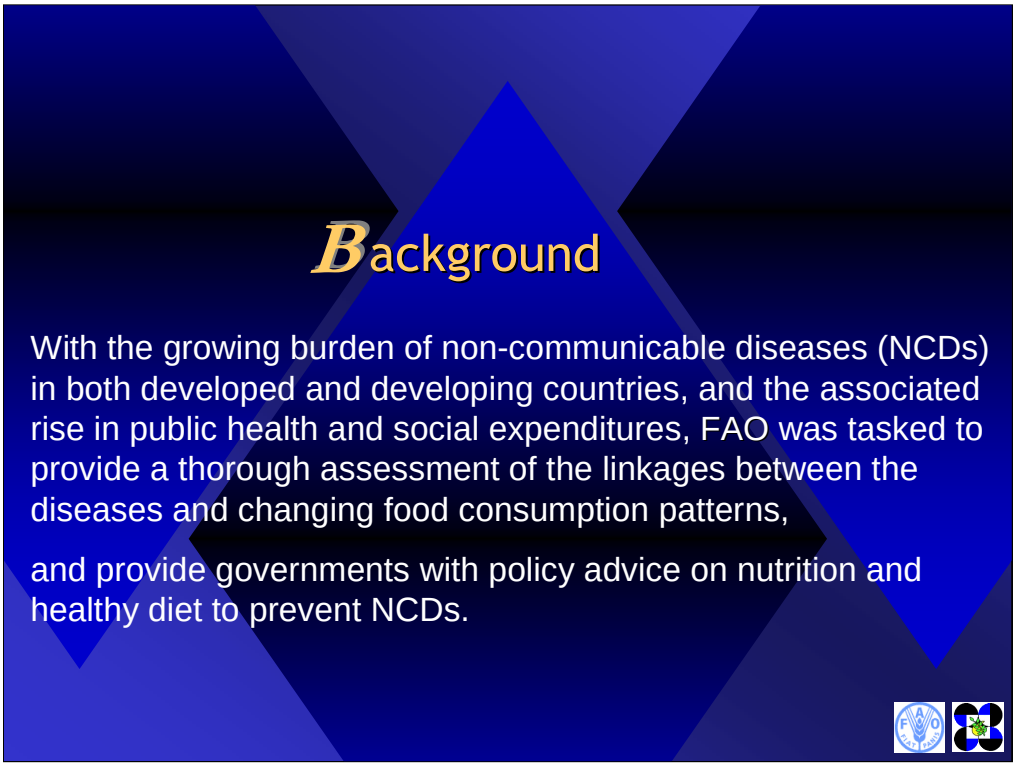


…

At the outset I wish to acknowledge the FAO for supporting our efforts in FNRI to analyze the data from our nutrition surveys, and examine the dietary changes and the evolving problems such as the double burden of under and over nutrition.



The interest on the phenomenon that we call the Double Burden of Malnutrition has come about because of the rise in obesity and diet-related non-communicable diseases, and the associated rise in public health, social and personal expenditures, in many countries, including ours, even as we continue to face the challenges of hunger and undernutrition.

With the growing global phenomenon, the FAO supported our effort, along with 5 other countries, to examine the evidence of linkages between the NCDs and changing food consumption patterns, whether or not there exists a double burden of malnutrition, with the objective of providing governments with policy advice on nutrition and healthy diet to address the Double Burden of Malnutrition.

Objective:

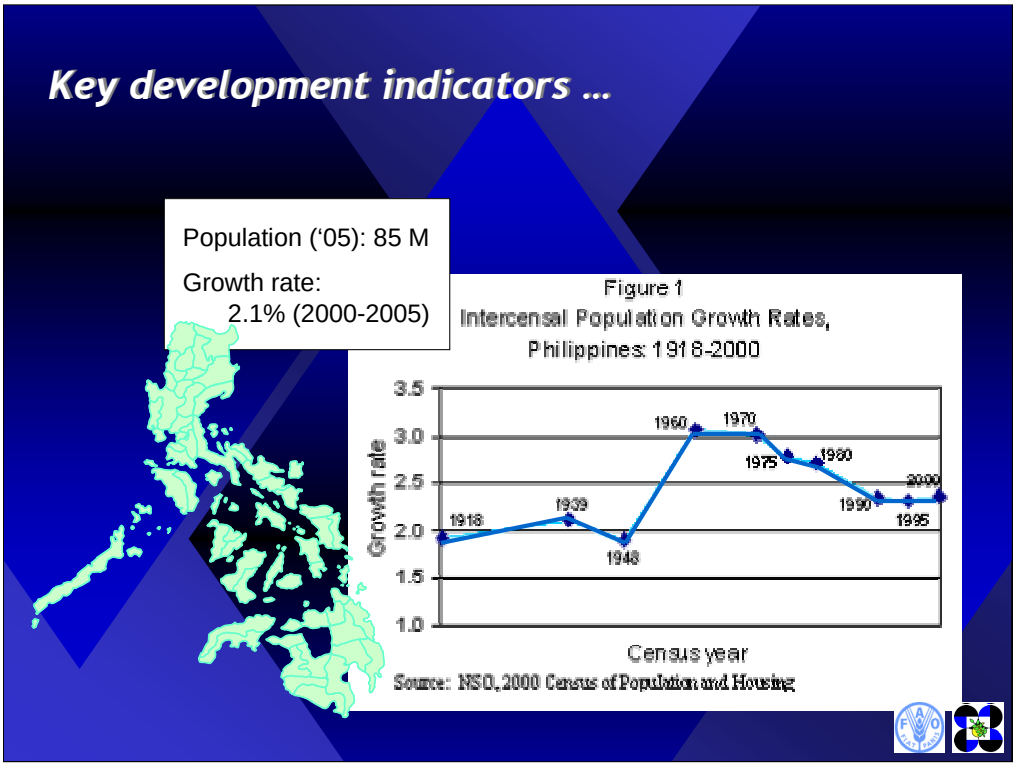
To examine the changes in food consumption patterns and the health implications

Is there an emerging *Double Burden* of malnutrition in the Philippines?

Objective:

To examine the changes in food consumption patterns and the health implications

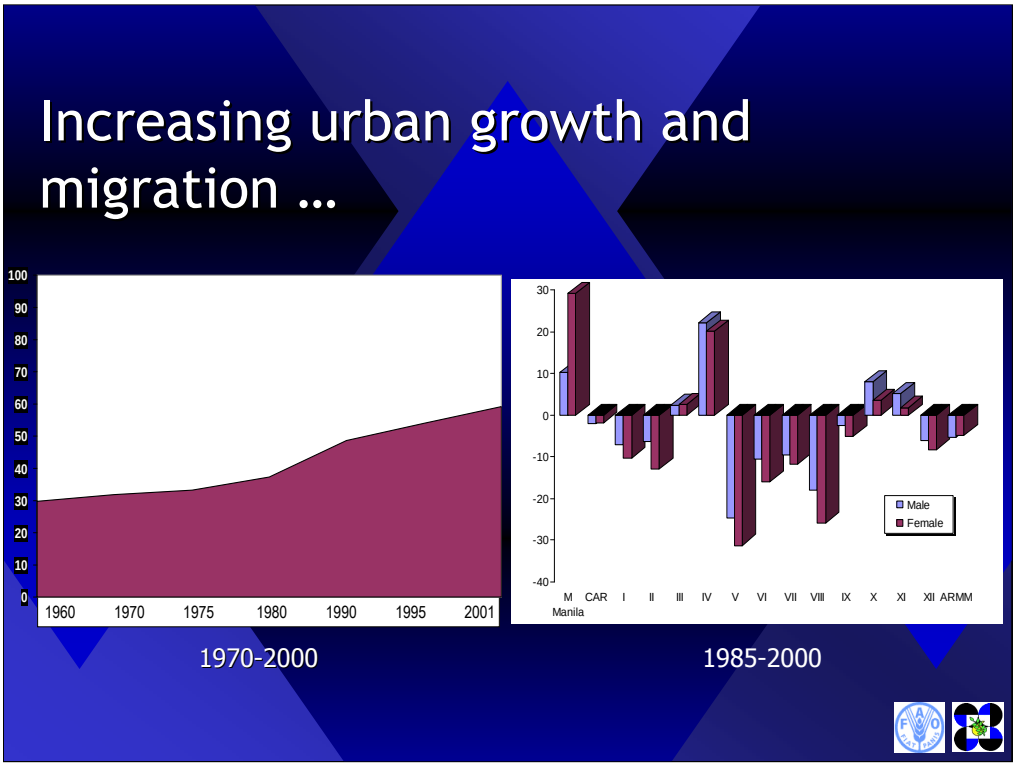
- **Some key development indicators**
- **Trends in food consumption and diet patterns**
- **Trends in the nutritional status of population groups: *Double burden?***
- **Nutrition-related indicators of NCDs**
- **Trends in causes of mortality**



Let me start with some information on our population size – to help us understand later the magnitude of the two sides of malnutrition: under- and over-nutrition.

Our population stood at 85 million in 2005, and continues to grow, although at a smaller rate now (2.1% between 2000-2005). Recent reports have indicated a population growth less that 2%.

Our dependency ratio has decreased from 88 to 64, because of the slowing down in the population growth.

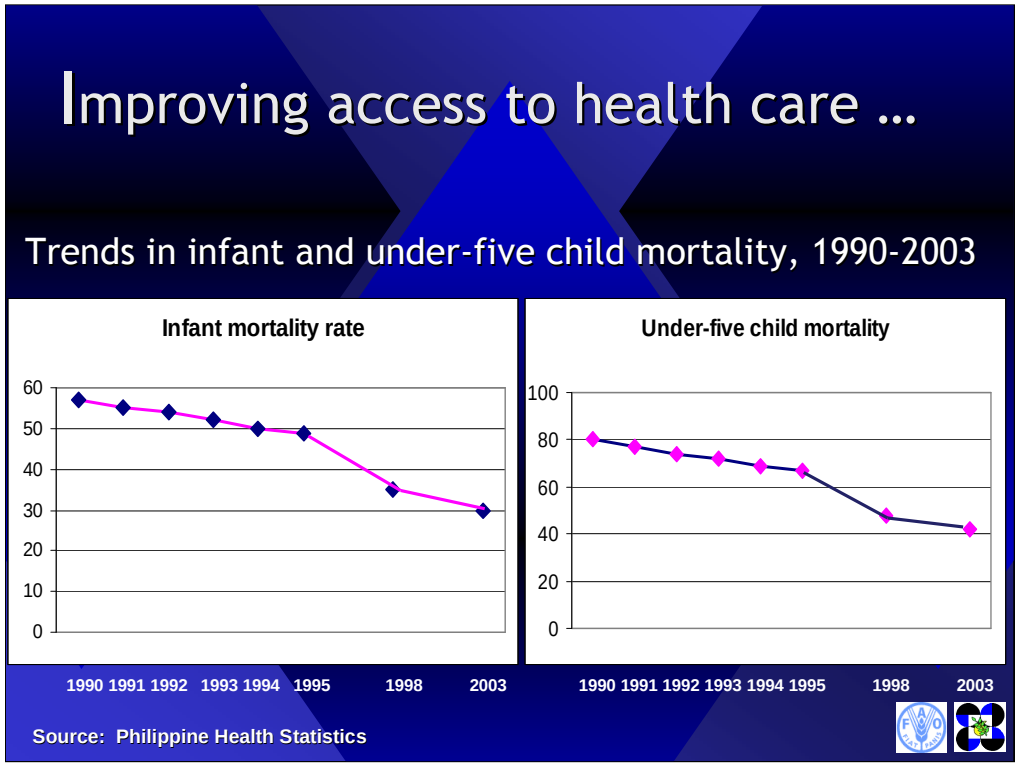


Here are two important demographic trends that have potentially strong influence on dietary patterns: urban growth and migration …

The last 30 years witnessed rapid urbanization in the Philippines, from 32 percent of the population living in urban areas in 1970 to 54 percent in 1995 and 59% in 2001. This is expected to increase to 68 percent in 2015 (5.14% growth).

In general, the rural population has been moving out and moving to regions like NCR, Regions IV, X and XI. Women are also more likely to move out than men, and this has implications on food production and care giving.

Increasing urban growth and migration are associated with increasing globalization.



With regard to health, generally, there has been improved access to health care …

Foremost among the evidences are:

-Decreasing infant and child mortality (although still far from the targets for the MDGs)

Also, related to these -

-85% of the population now have access to improved drinking water sources (also still far from targets in relation to the MDGs)

-From 80% - 90% of 1 yr old children received immunization against various childhood diseases, except Hepa B in 2002

-Life expectancy at birth in 2004 was 71 y, from 57 in 1970 and 65 in 1990

These improvements in health indicators can be attributed to the acceleration of science, health and communication technologies …

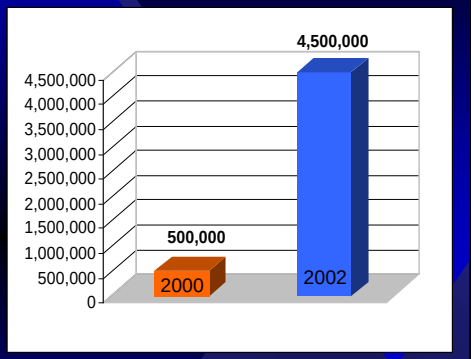
Increasing access to mass media and communication …

Access to mass media among 10 – 64 y olds, 2003

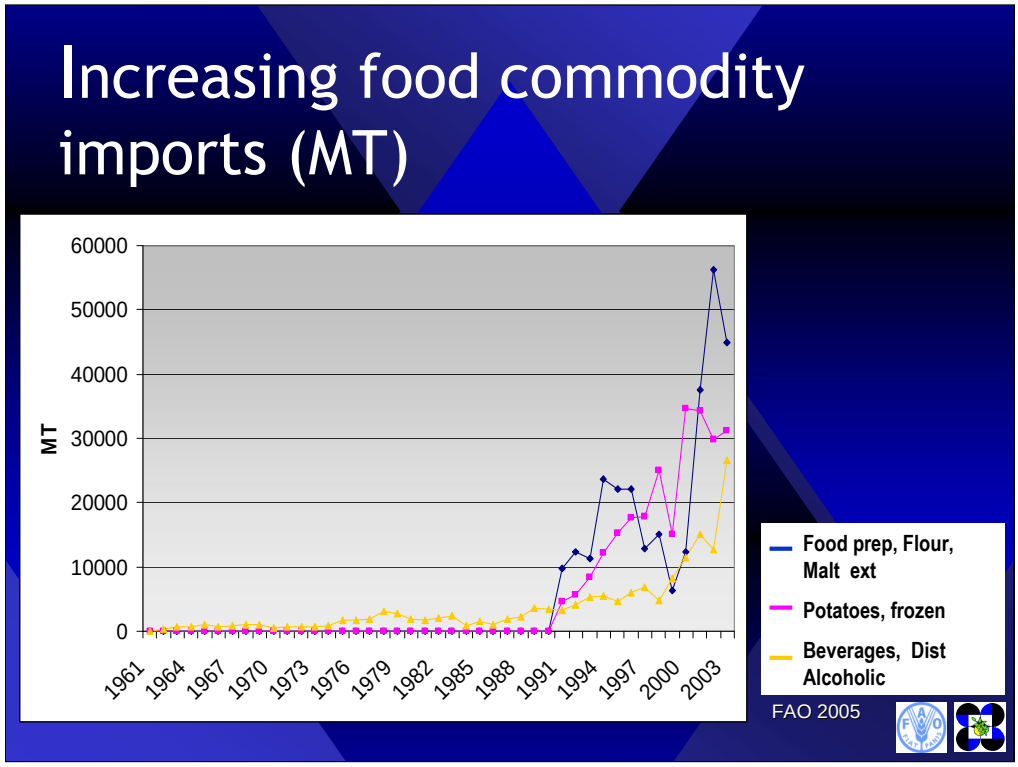
TV	**61.8**
Radio	**56.7**
Newspaper	**46.5**
Magazine/books	**36.7**
Computer	**20.0**
Barangay, church and meetings of other organizations	**32.2**
Signboard / poster	**16.6**

Source: National Statistics Office 2003 FLEMMS

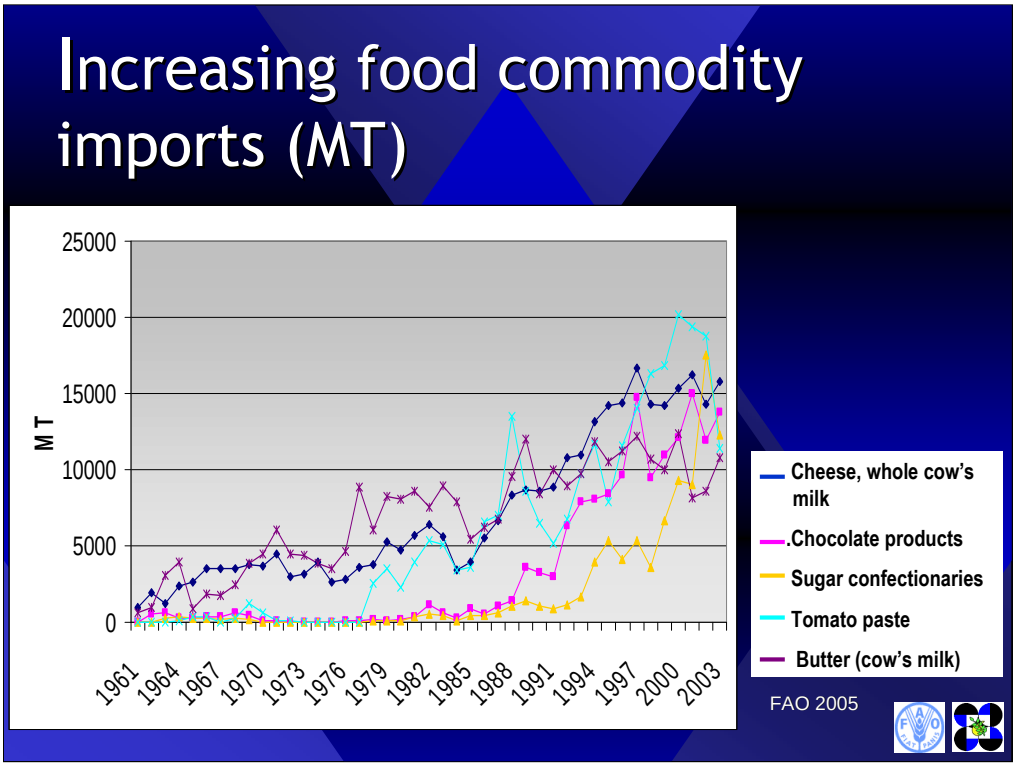
Philippine internet users: 2000, 2002



Globalization has also led to improved access to communication … Fax, telephone and the internet have replaced what used to be snail-pace letter communication. Relations between migrant communities in urban centers and abroad, and home communities have been facilitated by these new possibilities. The globalization of mass communication including TV, film, and video has reinforced preferences for processed foods, western foods, even among rural dwellers in remote villages.

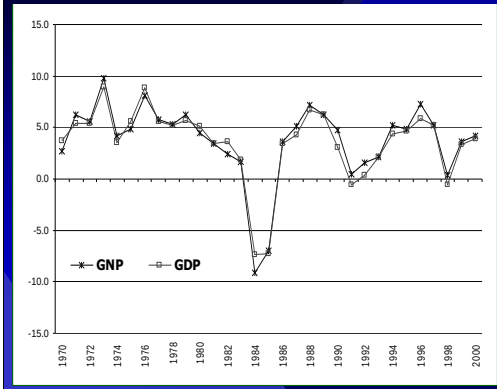


One of the more significant impacts of globalization is on food imports. This slide and the next, which depicts very clearly the rapid increase in the volume of some food imports, particularly after the WTO, support the claim that processed and fast foods are now more widely available – breads and our favorite hamburgers, french fries, colas and even distilled alcoholic beverages ...



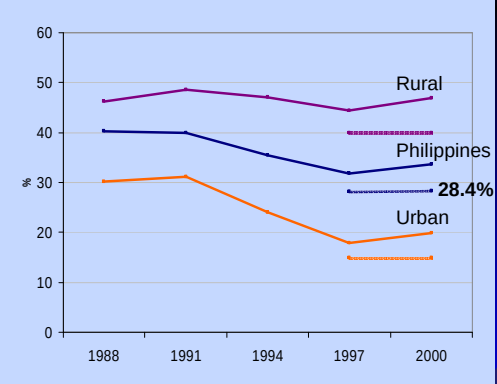
… Cheese and tomato paste on our pizzas and pasta, chocolates and confectionaries, and butter… The prices of processed food have become accessible, to some extent more than fruits and vegetables…

Trends in GNP and GDP



Source: Templo 2003

Trends in Poverty incidence

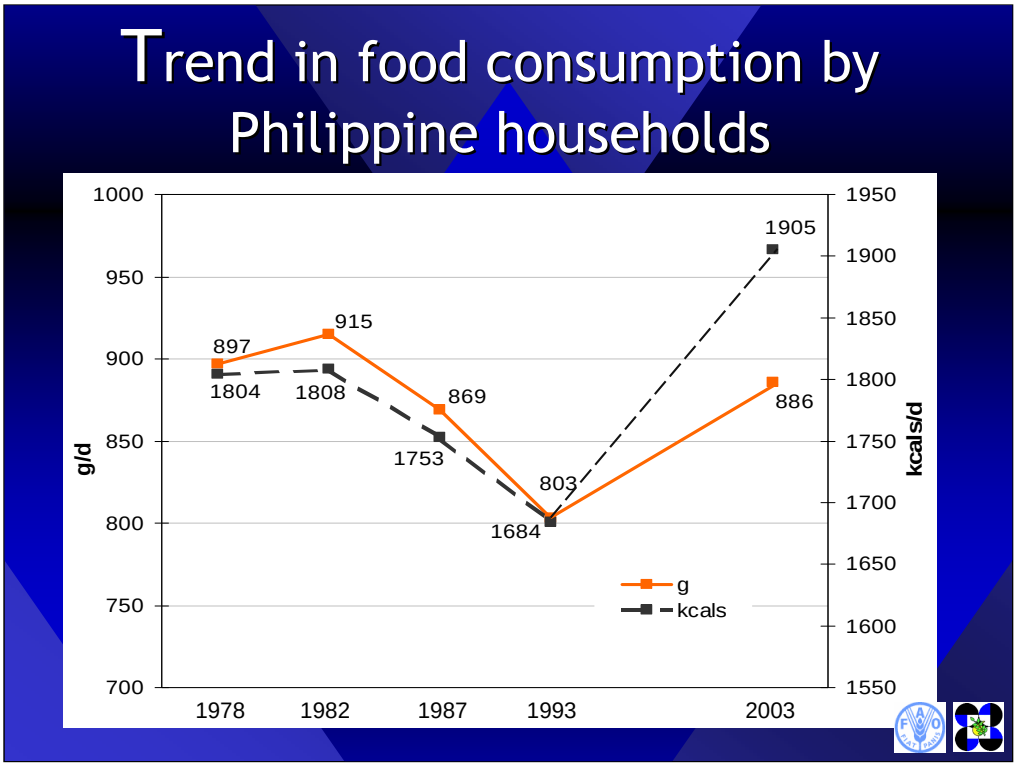


Source: Reyes 2003

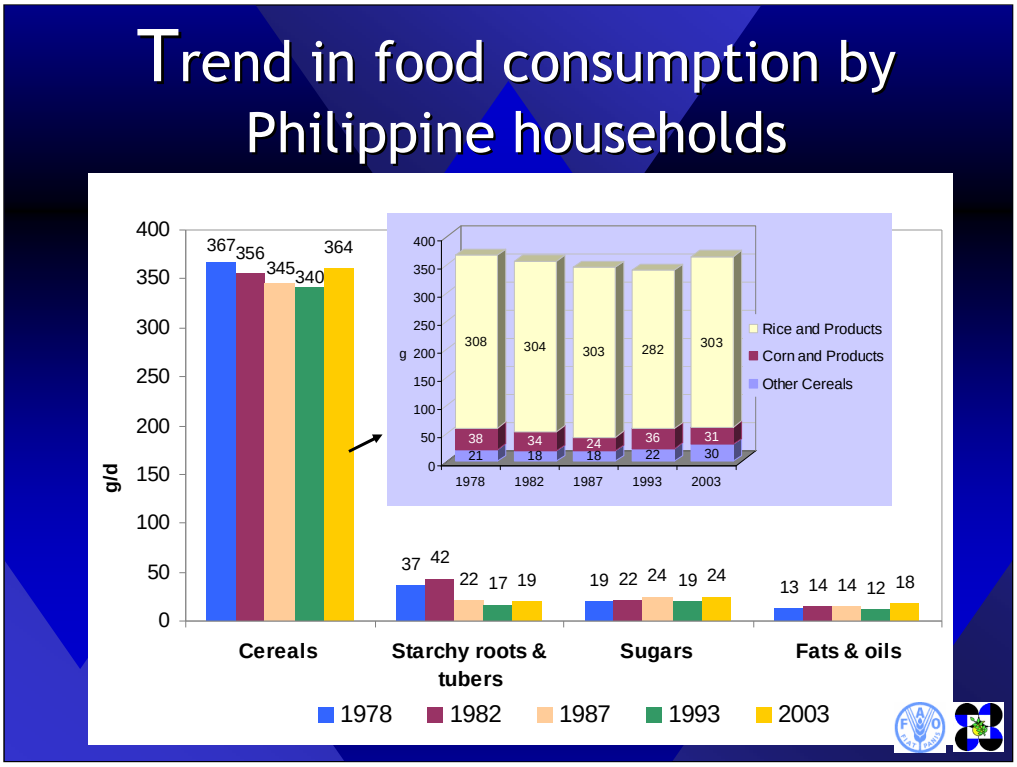
Still, while we opened our markets to keep pace with globalization and adopted improved communication and health technologies, our economy continued to experience a boom-bust pattern, reflected here by fluctuating GNP and GDP (because of political stresses, natural calamites, and influence of global and regional economic crises) …

Poverty incidence, while on a downtrend from 2000 to the present, is 24.4% in 2003 (poverty incidence among families) … [if poverty incidence among population, 33% in 2000 to 30% in 2003]

Trend in food consumption by Philippine households



At the outset, it was apparent from the NNS-FCS data that Philippine diets in the 25 years from 1978 to 2003 have increased in energy density. In 1978, 897 g of food consumed contributed 1804 kcal; in 2003, 886 g of food intake, which is not very different from 897 g contributed 1905 kcal.



The next slides show how patterns of food consumption by food groups, have changed during the same period.

-- The consumption of cereals increased particularly from 1993 to 2003, but not very significantly in 25 years . Rice and rice products have always been the major components for cereals and total food intake (about 34% in 2003)

-- The consumption of rice and products has generally not changed, fluctuating between 303 - 308 g in the 25 years

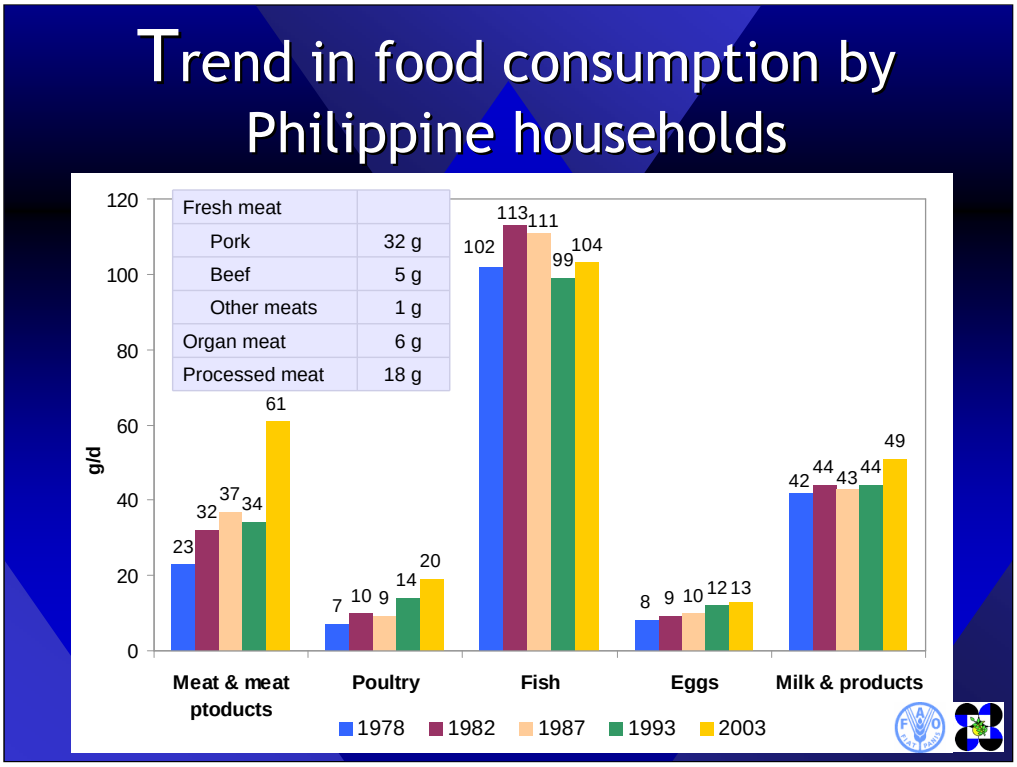
--The consumption of corn, which is a traditional staple in combination with rice in some parts of the country (Central and Southern Philippines) has been generally declining, except in 1993.

--The consumption of “other cereals and cereal products,” which includes breads and bakery products, noodles, and snack foods from wheat flour, peaked in 2003 (30g) and registered the highest %-increase among the staples (36%) between 1993 and 2003.

--The intake of starchy roots and tubers, a good source of dietary fiber, was twice less in 2003 (19 g/day) compared with 1978 (37 g/day).

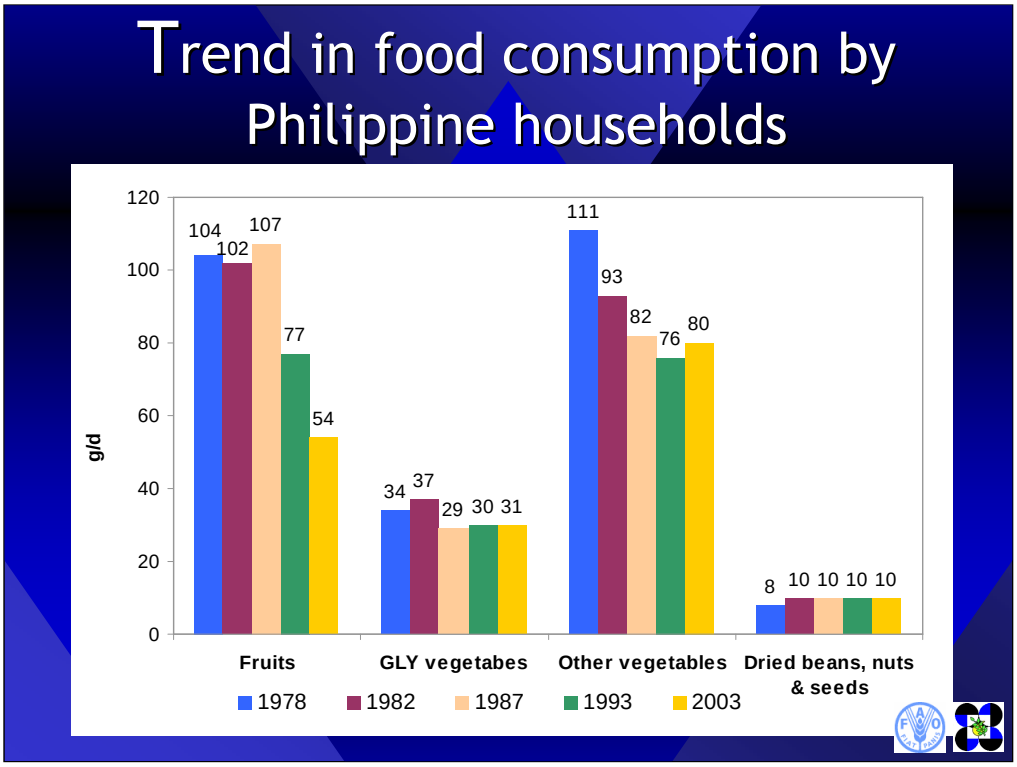
--The intake of sugars and syrups increased. The consumption of softdrinks, which is included in this group, particularly increased by 150% between 1993 and 2003 (per capita intake of 2 g in 1993 as compared with 5 g in 2003)

-- Consumption of fats and oils was 50% higher in 2003 than in 1993

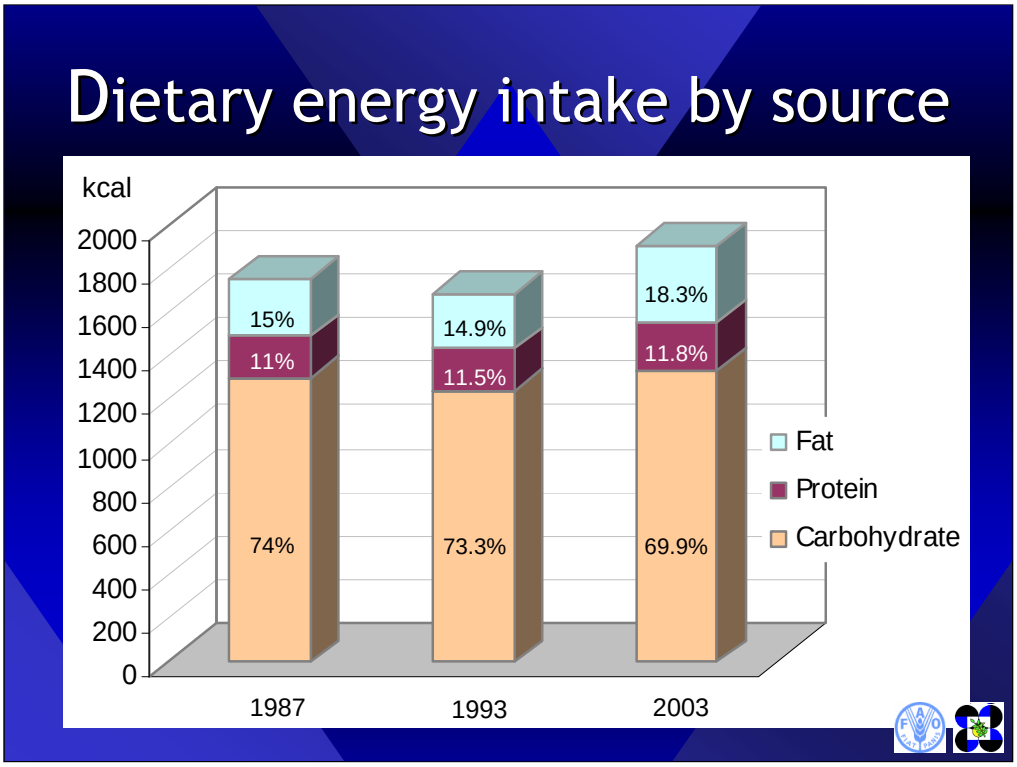


-- Consumption of meat and meat products (79% higher), poultry (43% higher), milk and milk products (11% higher), and miscellaneous food items (105% higher) also increased in the period 1993-2003.

-- With regard to meat and meat products in 2003, there was more intake of pork and processed meats (e.g., hotdogs, meatloaf, sausages). The intake of processed meat products in 2003 represented nearly 30 percent of meat intake.



--With regard to vegetables and fruits, the consumption and contribution to percent total food intake has declined. The intake of fruits, both vitamin C rich and other fruits, hit a low of 54 grams in 2003, a decrease of 50 grams per capita since 1978 and a steady 30%-reduction during the periods 1987 – 1993 and 1993 – 2003 . Among the vegetables, the intake of green leafy and yellow vegetables has been the same from 1987 to the present while that of other vegetables increased by only 4 g in the past decade.



--The average contribution of fat to total dietary energy intake increased from 15 to 18 %.

Proportion of population meeting Dietary Goals

Year	% of population with 15-30% energy intake from fat	% of population with < 10 % energy intake from free sugars	% of population with 55-75 % energy intake from carbohydrate	% of population consuming ≥ 400g/day fruits and vegetables
1993	37.6	94.3	53.0	11.5
2003	46.2	92.1	57.9	8.2

While there has been an increase in the proportion of the filipino households meeting the dietary goal of 15-30% of dietary energy contributed by fat, and 55-75% from carbohydrates… there has been a decrease in the proportion of the population with less than 10% coming from free sugars and consuming at least 400g/day fruits and vegetables…

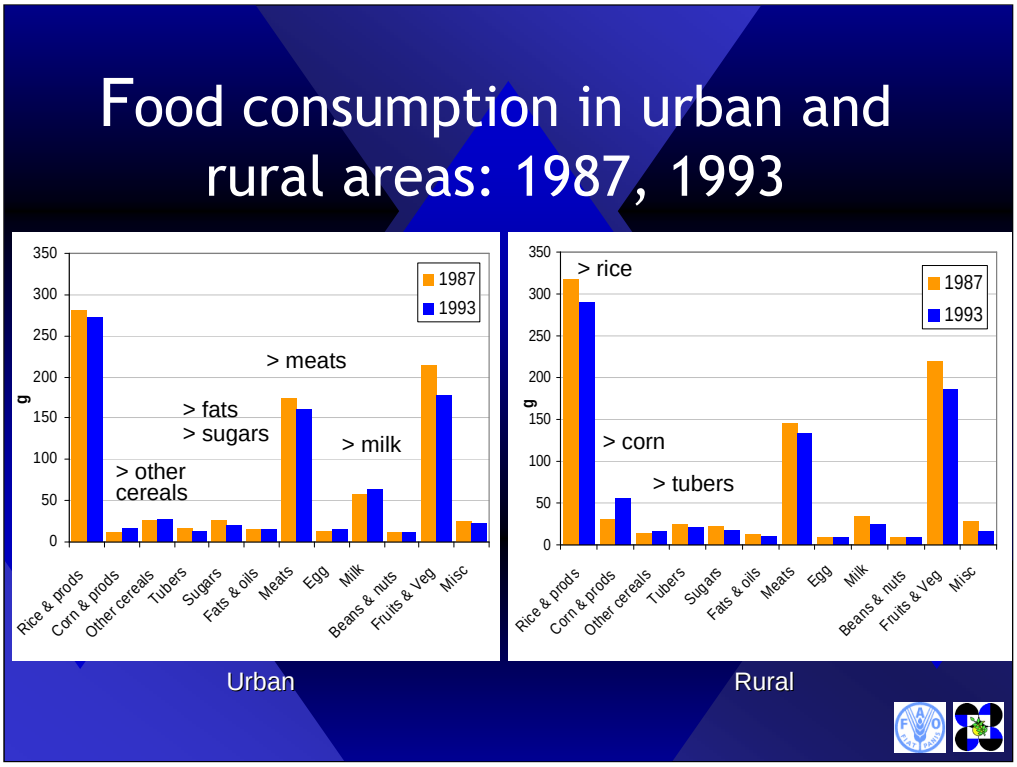
Adequacy of energy and nutrient intakes, 2003

Energy and Nutrient	Mean Intake	Proportion of households with ≥ RENI	Proportion of households with < RENI
Energy (kcal)	1905	43.1	56.9
Protein (g)	56.2	66.0	34.0
Calcium (g)	0.44	15.9	84.1
Iron (mg)	10.1	19.5	80.5
Vitamin A (ug RE)	398.3	19.8	80.2
Thiamin (mg)	0.88	44.9	55.1
Riboflavin (mg)	0.73	27.3	72.7
Niacin (mg)	20.1	90.9	9.1
Vitamin C (mg)	46.5	31.7	68.3

* 100 RENI for energy adequacy, 80% RENI (assuming Estimated Average Requirement) for protein and other nutrients

Still, majority of Philippine households have inadequate intakes for energy, calcium, iron, vitamin A, thiamin, riboflavin and vitamin C.

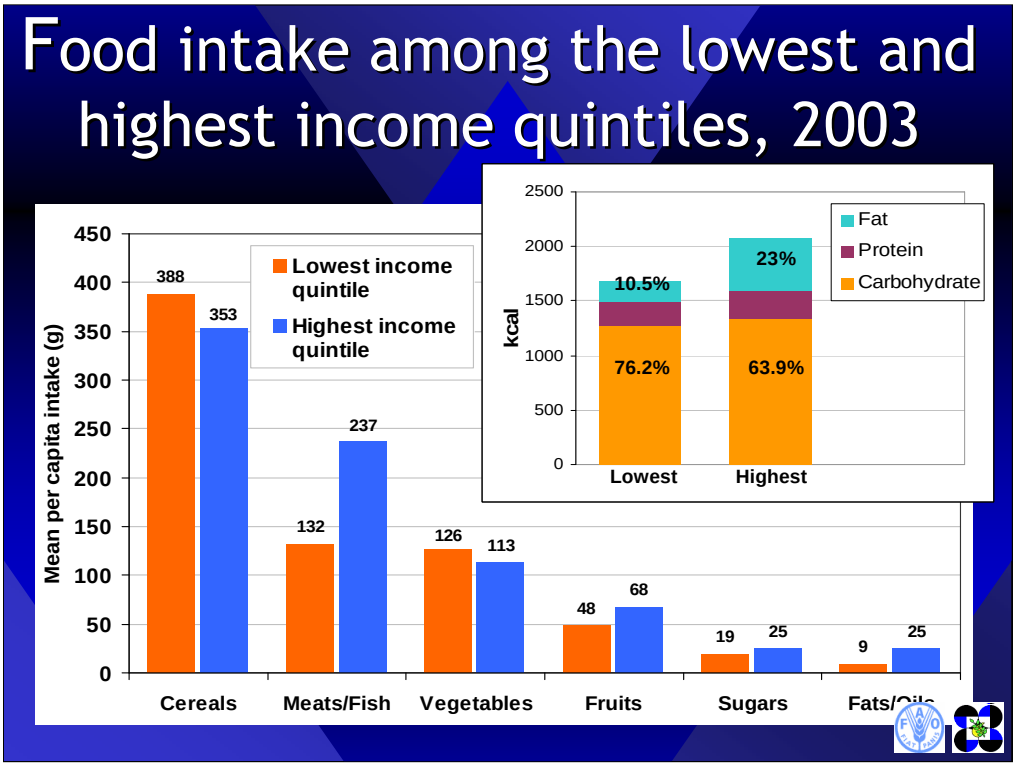
RNI (RDA) is set at a level that is sufficient to meet the needs of nearly all (97-98%) individuals in a population group – taking into consideration the variance of nutrient requirements among individuals of a specific lifestage and gender . The RNI (RDA) thus exceeds the requirements of nearly all members of the group. This is based on the estimated average requirement plus 2SD (except for energy, which is set at the EAR).



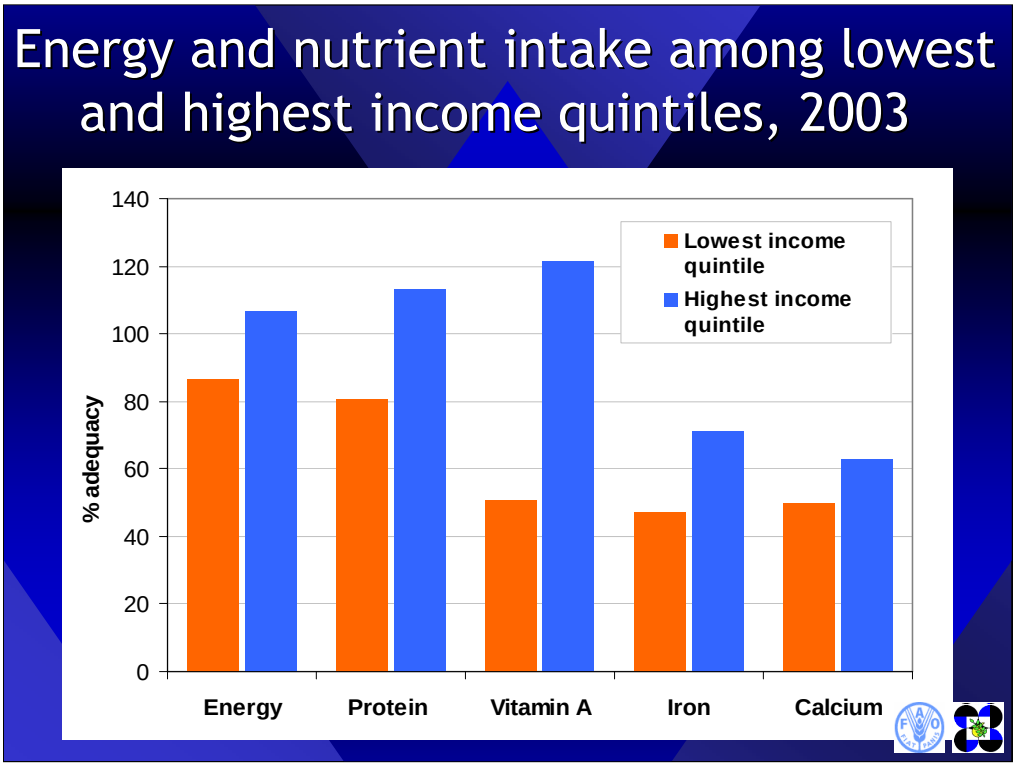
-- The intake of cereals and cereal products, specifically rice and corn products; starchy roots and tubers; fish; and vegetables, including green leafy and yellow, and other vegetables are higher in rural than in urban areas.

-- Urban households, on the other hand, have higher per capita intake of "other cereals and cereal products", which includes, among others, breads and bakery products, noodles and snack foods from wheat flour; sugars and syrups; fats and oils; meat and poultry; eggs; milk and milk products; dried beans, nuts and seeds; as well as vitamin-C rich fruits.

--The food intake in the rural areas has followed the trend in urban areas. Like in the urban areas, the consumption of rice and products, starchy roots and tubers, and fruits in the rural areas decreased from 1987 – 1993, while that of "other cereals and cereal products" increased. Urban patterns of food consumption has significantly reflected on the dietaries of the rural population for various reasons including the influence of urban migrants on the families they left behind, improved transport and communication between urban and rural areas, and increasing availability of processed foods in the rural markets.

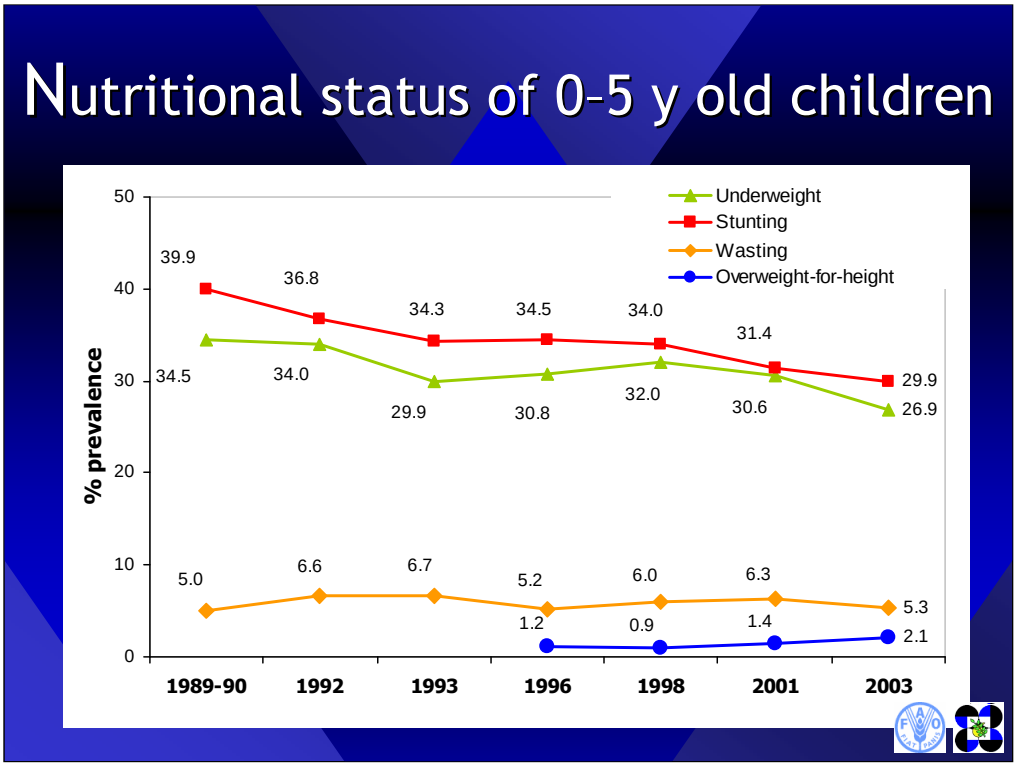


I have two slides that show disparities in food consumption and energy and nutrient intakes by income groups… The disparities are clear. The lowest income group has higher intake of cereals (rice and rice products comprising the greater bulk of this group), and to some extent, vegetables than the households in the highest income quintile. This same group (the lowest income quintile) has lower consumption of meats and fish, fruits, sugars, and fats and oils… Among the lowest income quintile, 10.5% of dietary energy is contributed by fats; this is 25% among the highest income quintile.



The disparities are apparent as well with regard to energy and nutrient intakes, with the households in the lowest income quintile having lower intakes than the highest income group.

Trends in nutritional status of population groups

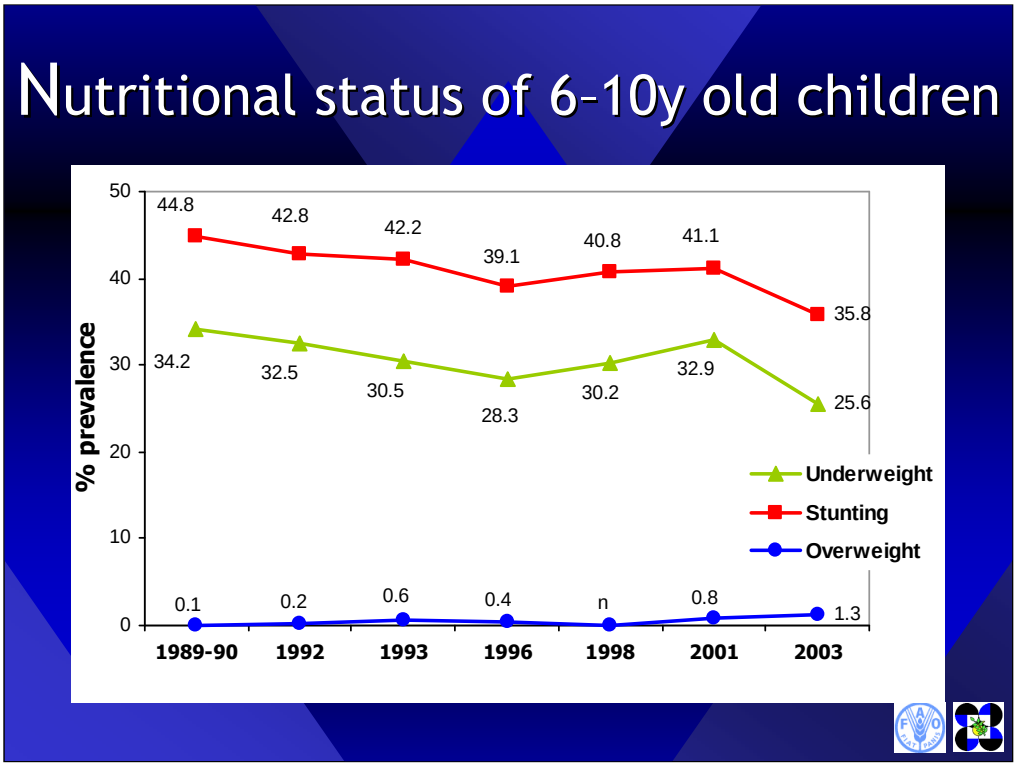


--There has been a declining prevalence of undernutrition, specifically underweight and stunting, from 1989/90 to 2003. Within this period, the proportion of underweight 0 – 5 year-old children has declined 7.6 percentage points, from 34.5% to 26.9% (0.58 percentage point reduction a year); Stunting declined 10 points (0.77 percentage point a year) – these data has provided the basis for the MTPPAN targets for 2005-2010, emphasizing the need to double our efforts in reducing undernutrition among children.

--Overweight-for-age, although affecting a smaller proportion among the children has been increasing significantly.

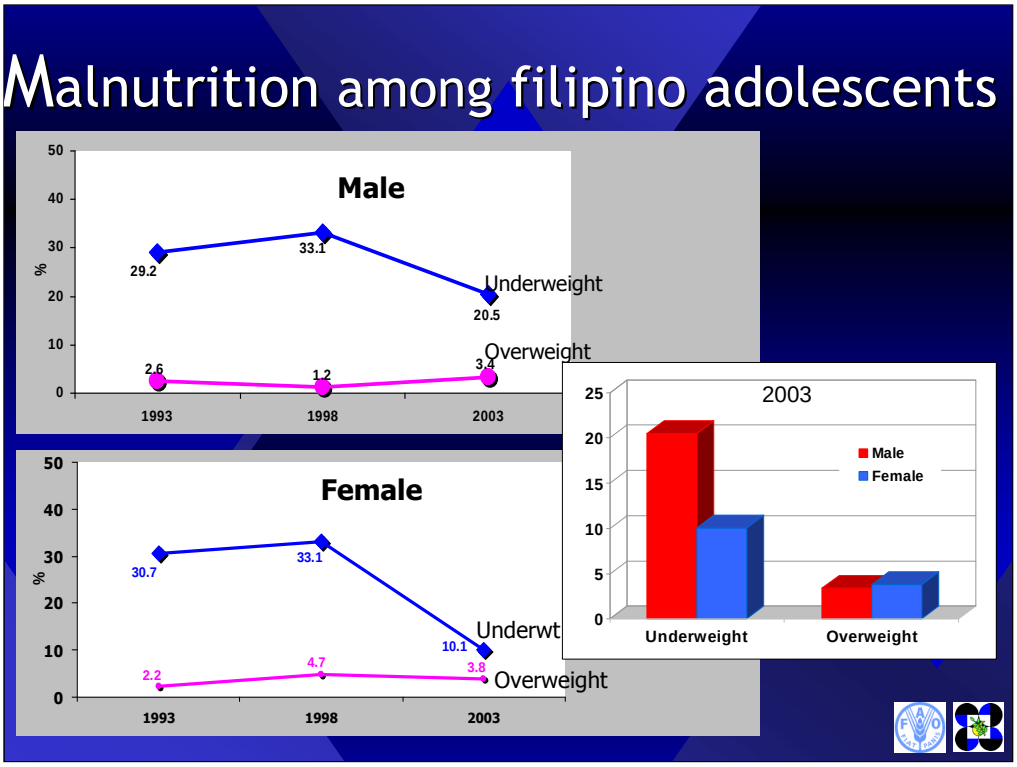
--In terms of target, the average annual percentage reduction of 0.58 percent is not sufficient to meet the Millennium Development Goal target of 17.25% proportion of underweight-for-age children under five years old by 2015.

--Geographical (regional) disparities in the nutritional status of the children exist and measures on reduction of the prevalence of undernutrition will have to be strengthened in the regions where the magnitude of the problem is greater. The proportion of underweight-for-age children is higher in the Administrative Region of Muslim Mindanao (34%), one of the poorest regions of the country, and the MIMAROPA region (34.2%) in Southern Luzon compared to Metro Manila (17.8%), Central Luzon (21.7%) and the Cordillera Administrative Region (16.3%).



--There has also been a declining prevalence of undernutrition, specifically underweight and stunting, among 6 – 10 y old children. The prevalence of underweight was reduced by 8.6 percentage points, from 34.2% to 25.6% (or 0.66 percentage point reduction a year); Stunting declined 9.0 % points (0.69 percentage point a year).

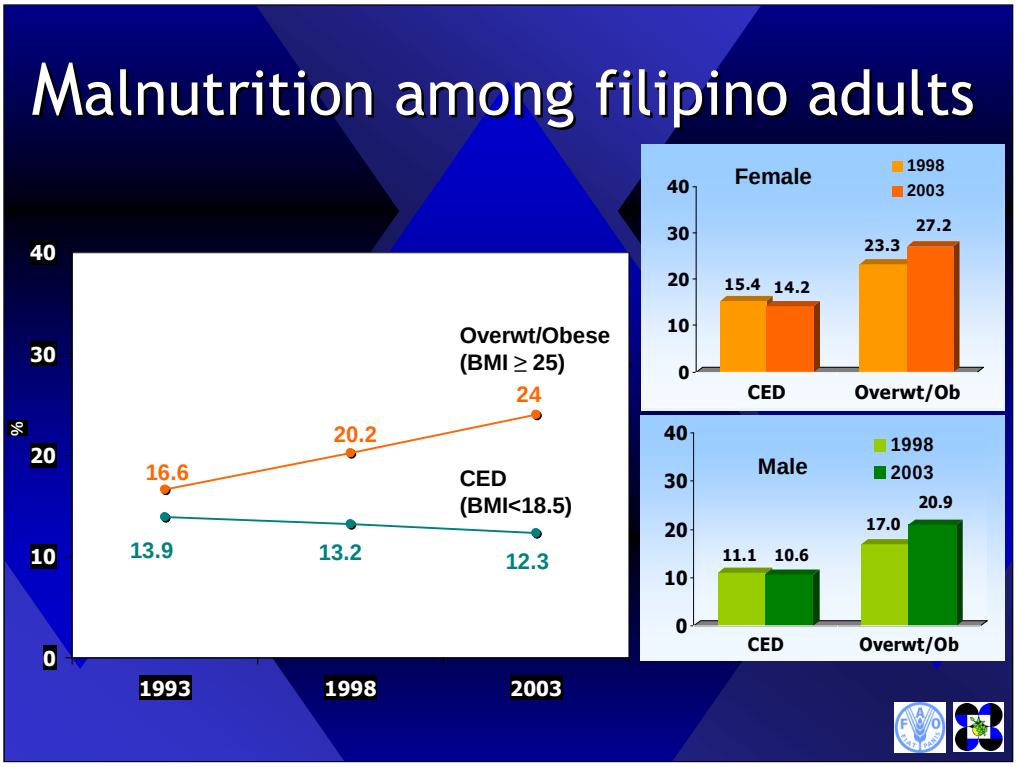
--Overweight-for-age, although affecting a smaller proportion among the children also has been increasing.



--The proportion of underweight among 11 – 12 years old adolescents was nearly the same as that of the children 10 years of age and below in 2003, or about 3 out of 10 (25.9%).

--Underweight among the 11 – 19 year-olds decreased between 1993 and 2003 for males and females, but twice as much among the females compared to the males particularly after 1998.

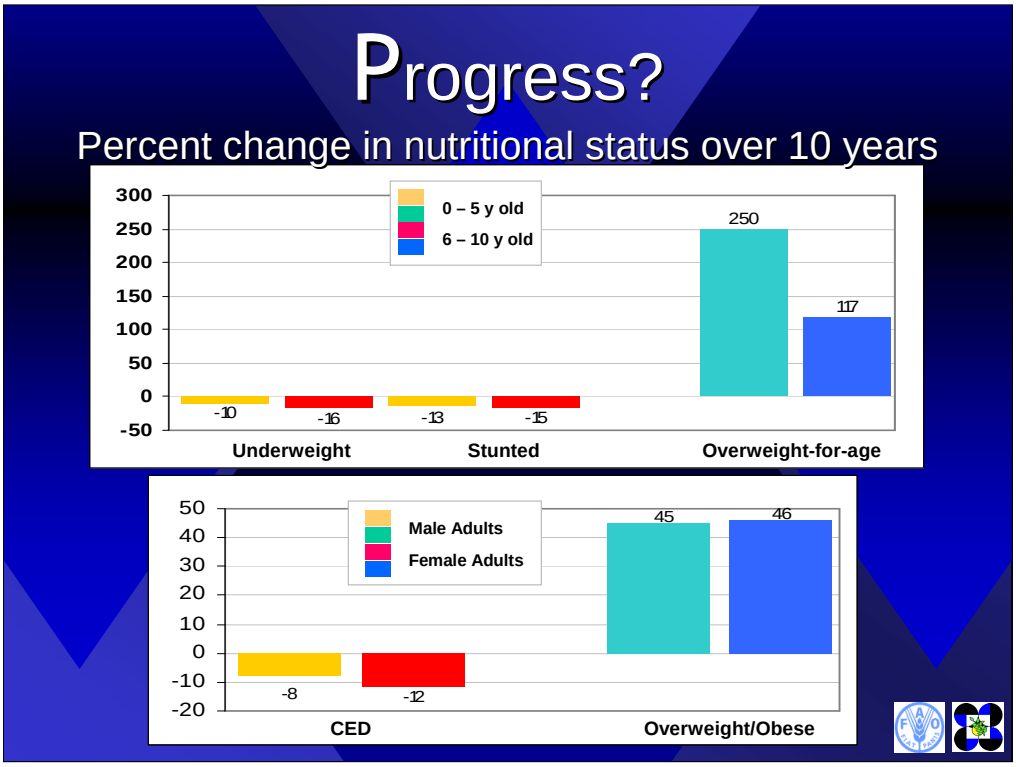
--On the other hand, overweight has increased, affecting 4.2% of the 11 – 12 year- olds, and 3.4% among the 13 –19 years of age (adolescents) in the same year. The prevalence of overweight among these groups has increased steadily, also with larger percentage increases among the females than males.



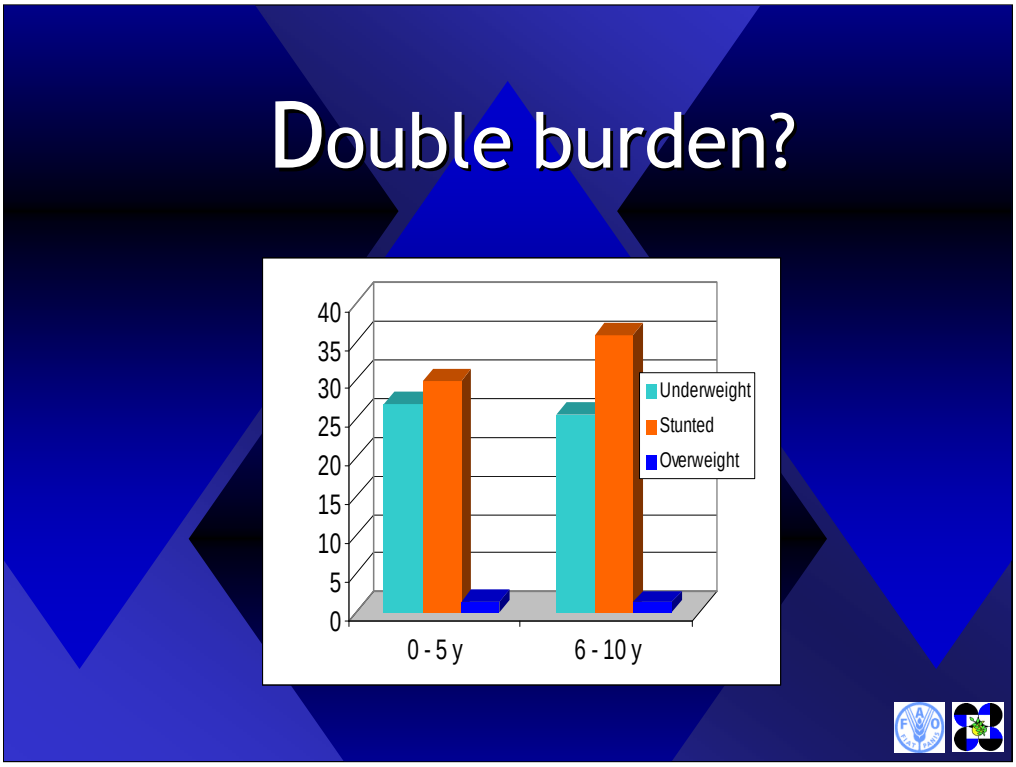
--Among adults, undernutrition (BMI < 18.5) affected 12.3% in 2003. Based on the WHO cut-off of 3-5% BMI below 18.5 for a healthy adult population (WHO, 1995), adult undernutrition in the Philippines is also a nutrition problem that needs to be addressed.

--On the other hand, 24% of adults are overweight or obese, with more females (27.2%) than males (20.9%) who are affected (Overweight: BMI 25 - < 30; Obese: BMI ≥ 30)

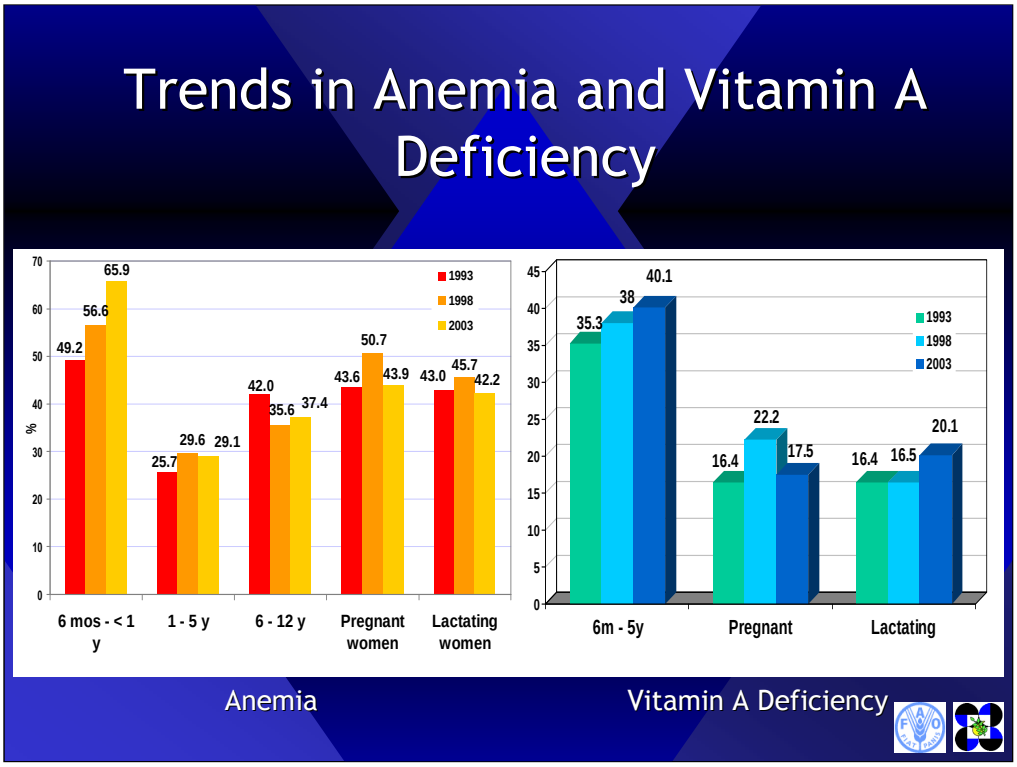
--While progress in reducing underweight has been slow (about 10% reduction over 10 years), BMI >25 has been increasing steadily by 20% between each 5-year interval from 1993 - 2003.



We have achieved some reductions in undernutrition among preschool- and school-age children, as well as among adults. But is this progress where, on one hand, reductions in undernutrition have been slow, and on the other, overnutrition registers a 250 %-increase among the 0-5 y old children, 117 %-increase among 6-10 y old children, and 45 %-increase among adults.



Is this double burden – where for every 100 0 – 5 y old children, 27 are underweight, 30 are stunted, … two are overweight.. And among the 6 – 10 y old children, 26 are underweight, 36 are stunted and 1 is overweight in a hundred.



Anemia and the vitamin A deficiency problems affect various population groups in public health proportions …

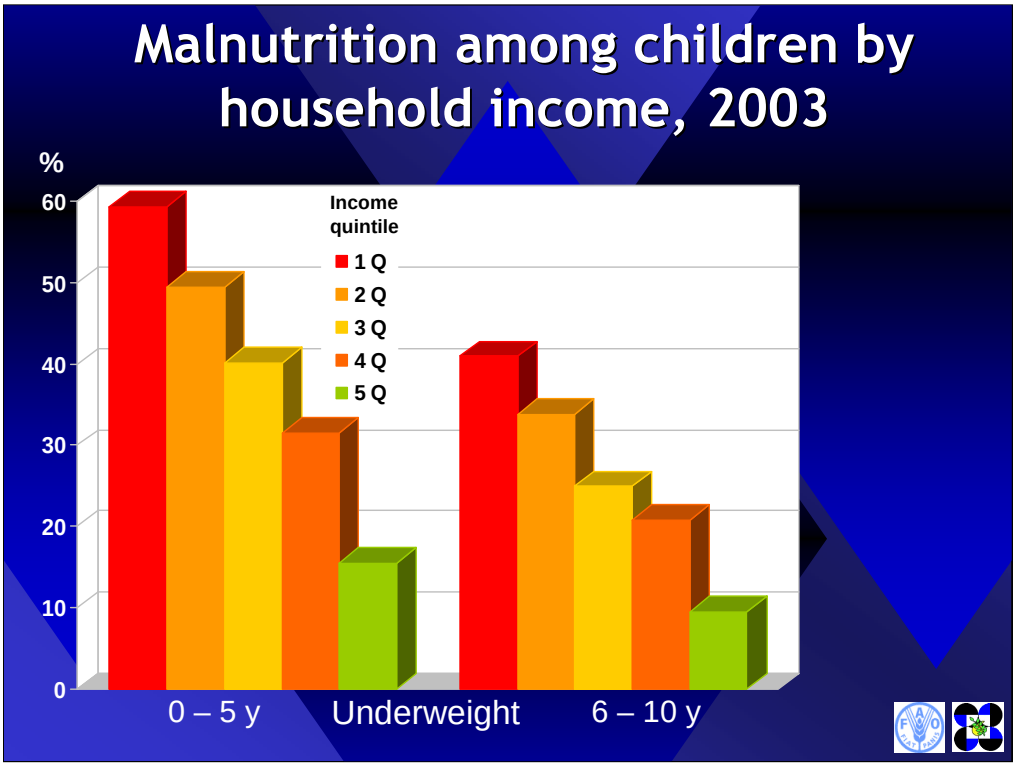
-- Two out of three infants 6m – less than 1 y of age are anemic. The public health magnitude extends to children from 1 to less than 2 years of age, and among children 6-12 years of age. These children have the risk of suffering from long-term cognitive impairment.

-- The VAD problem among the pregnant women may reach as high as 46% prevalence if we use a cut-off of <30 ug/dL serum retinol.

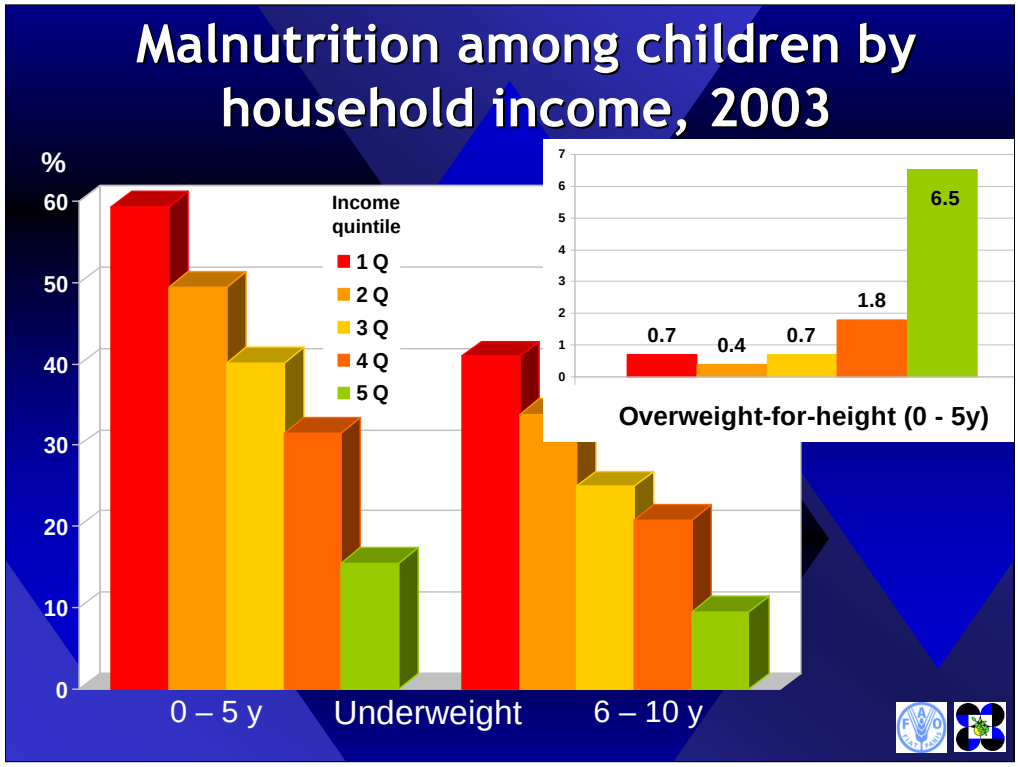
More notes…

-- Low birthweight infants are born with lower iron stores and grow faster during infancy; consequently their iron stores become depleted by ages 2-3 months. Philippine data on low birth weight from the State of the World's children placed low birth weight at 20% for the period from 1998-2003 (and only 9% from 1990-1997) – and there appears to be clear association between increasing prevalence of low birthweight and the escalating anemia problem among infants in the last 10 years.

-- the prevalence of helminth infections (notably soil transmitted helminthiasis, and to a lesser degree schistosomiasis) among 6 – 14 y old children ranges from 32 – 97%; the prevalence among children 1-5 y of age is 66% -- associated with iron as well as vit A deficiency; improvements in iron and vit A status has been shown after deworming

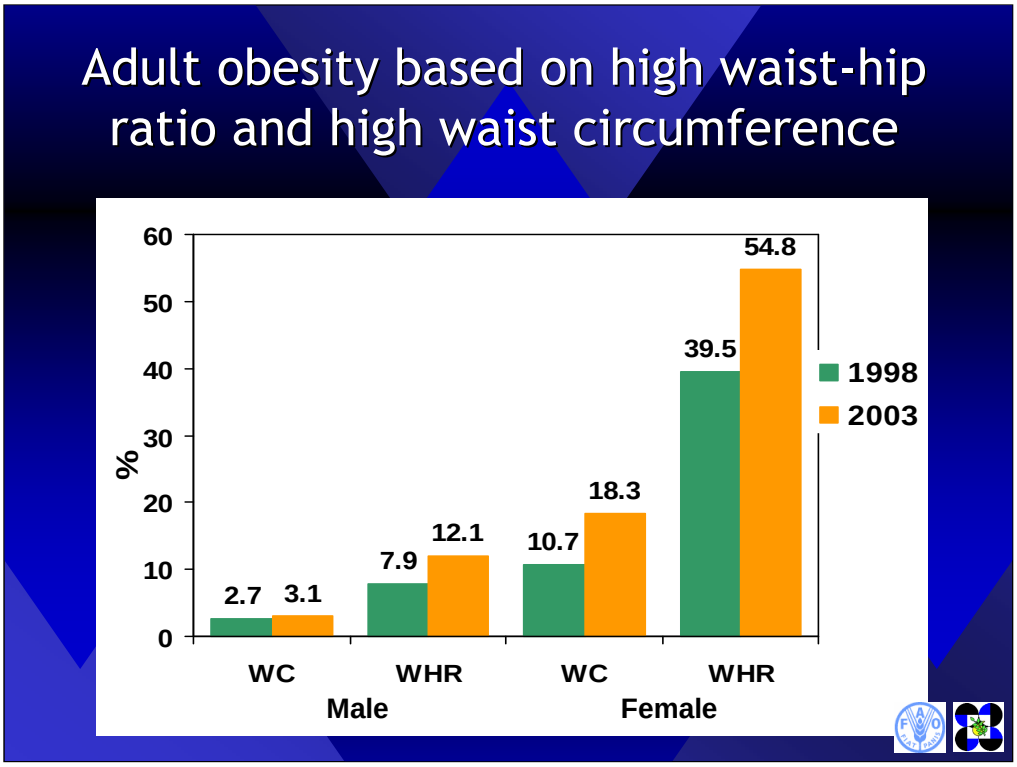


There is disparity by income class in malnutrition among children… There are more underweight children among the lower income groups, in this case quintiles, and the proportion of underweight children is least among the highest income quintile… There are 4 underweight children (for either age group) in the 1st quintile for every 1 underweight child in the 5th quintile.



On the other hand, the magnitude of overweight among 0 – y old children is highest among the highest income quintile; the low rate not different among the 1st through the 3rd income quintile -- I hope this provides useful information for identifying and targeting nutrition programs – addressing undernutrition among the lower income groups and public schools, and maybe overweight and physical activity in private schools.

Trends in NCDs and causes of mortality

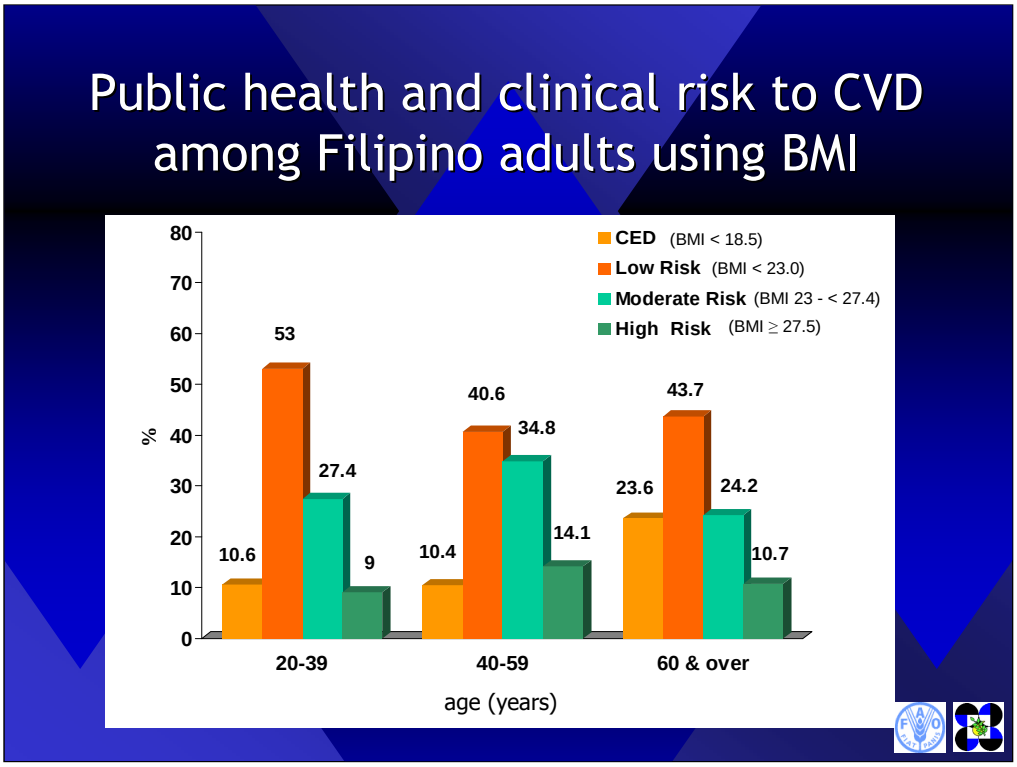


--The problem of overnutrition among adults is further highlighted when waist-hip ratio and waist circumference are used.

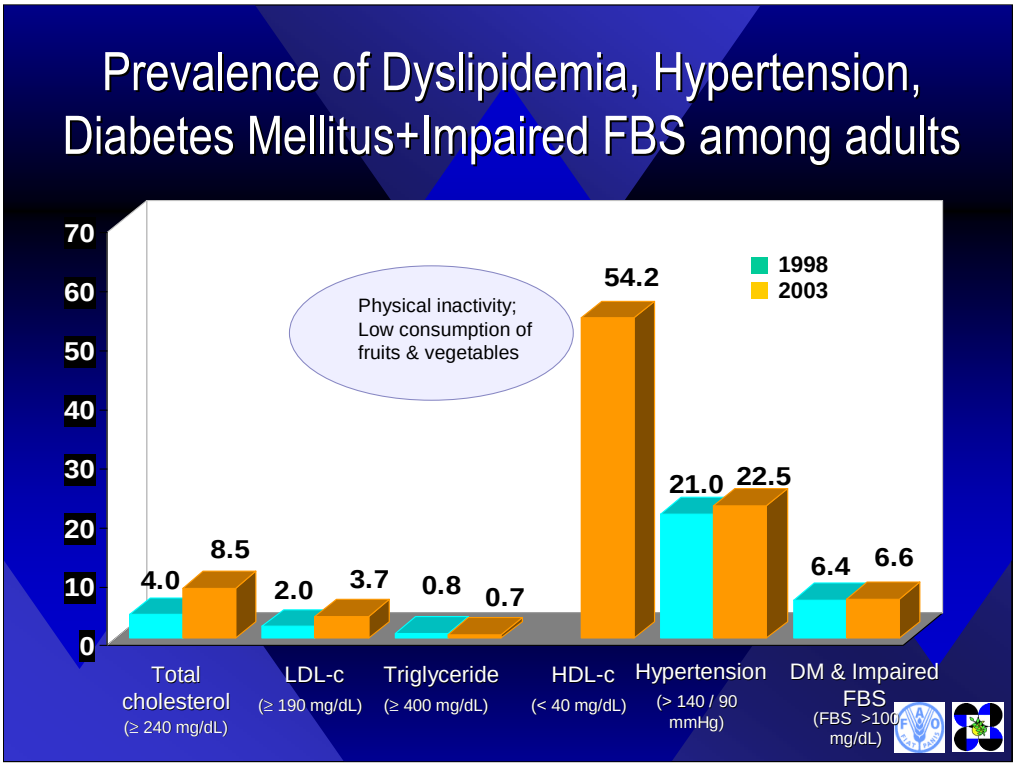
--Waist circumference (WC) reflects intra-abdominal fat mass, while waist-hip ratio (WHR) is an index of abdominal fat distribution.

--The data reflect a problem of overnutrition of greater public health concern especially among female adults

--Using waist-hip ratio, android obesity affects one in every two women (54.8%) 20 years of age and over; this figure is 38.7% higher than the 1998 level. Using waist circumference, the increase in android obesity in women was at a faster rate (70% increase, from 10.7% - 18.3%) between 1998 and 2003.



--Using the BMI cut-off points recommended by the WHO Expert Consultation for Asian population to determine public health and clinical action in relation to cardiovascular disease (i.e., BMI 23 – 27.4 = Moderate Risk; BMI ≥ 27.5 = High to Very High Risk), the proportion of Filipino adults with moderate to very high risk to co-morbidities related to cardiovascular disease reaches even more significant proportions than looking simply at figures of overweight or obesity

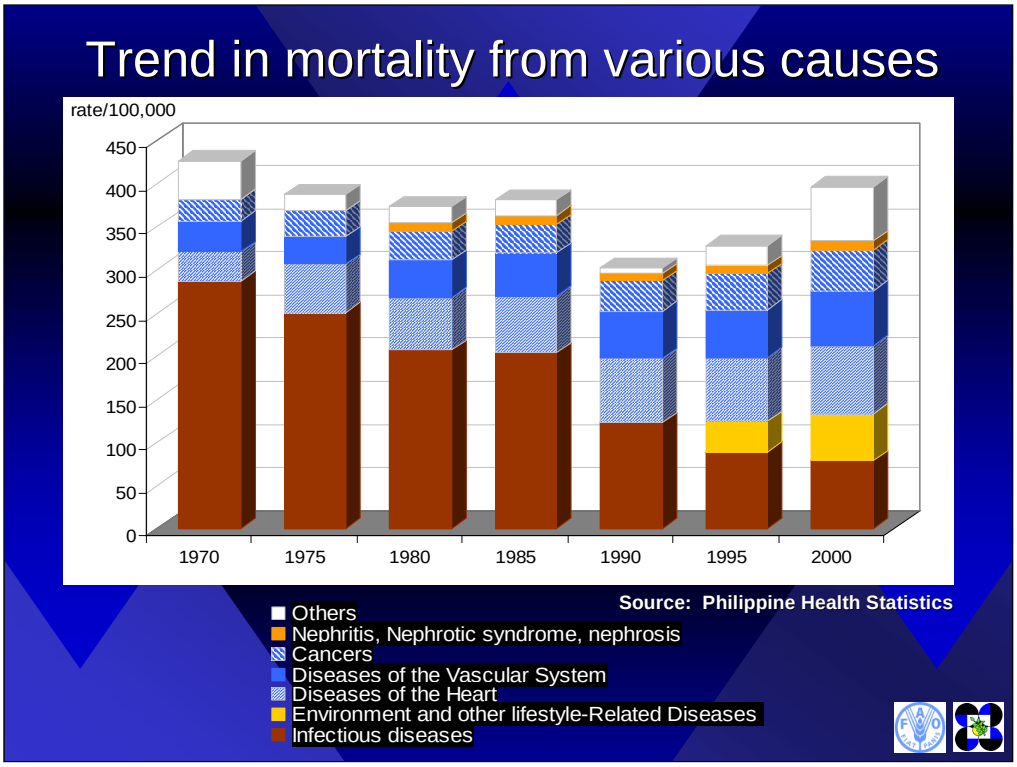


This slide shows the trend in the prevalence of other nutrition-related risk factors to CVDs… The prevalence of hypercholesterolemia in 2003 is twice the rate in 1998. Elevated LDL-cholesterol was also significantly increased in 2003. These increasing trends (hypercholesterolemia and elevated LDL-cholesterol) may be associated with the increase in consumption of animal-based foods, particularly meats, and, possibly, fats and oils, as well as the decreasing fruit and vegetable consumption.

There is no evidence of an increasing prevalence of elevated triglycerides; there is thus no evidence that could be associated with the increasing consumption of fats and oils *(which is mostly coconut oil)* in Philippine households.

There is also no evidence to support an increasing prevalence of low HDL-cholesterol (because the method for measuring HDL in the 1998 and 2003 surveys were not the same). But low HDL in 2003, at 54%, is certainly high, and this may be linked to the high prevalence of physical inactivity among Filipino adults (which, from the NNHeS, was about 72 - 81%, depending on the occupational status of adults) and low consumption of fruits and vegetables.

The prevalence of both hypertension and elevated blood sugars (including both impaired fasting blood sugar and diabetes mellitus) were slightly increased in 2003.



Mortality data from all causes in the three decades from 1970 – 2000 show that mortality from infections including pneumonias, tuberculosis, bronchitis, other infectious diseases (i.e., gastroenteritis and colitis, diarrhea and measles), tetanus, avitaminosis and other nutritional deficiencies has been declining significantly;

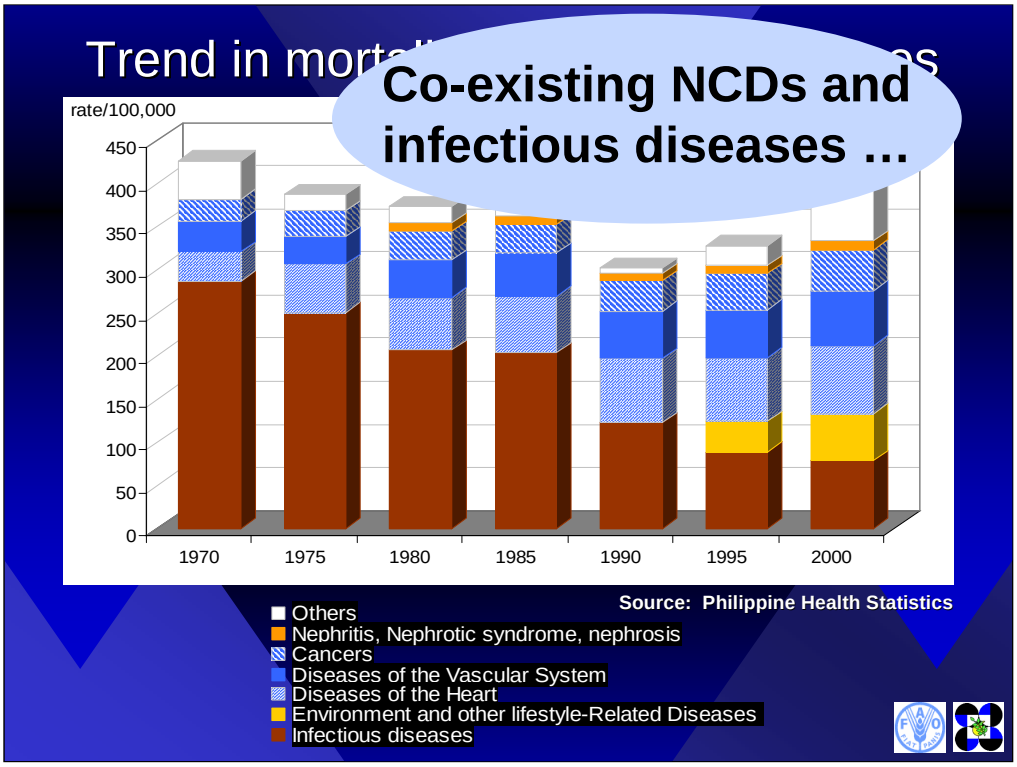
--Pneumonia was the leading cause of death in the country in 1970, until about 1985

--Tuberculosis was the second leading cause of death, and other infectious diseases were third, in 1970

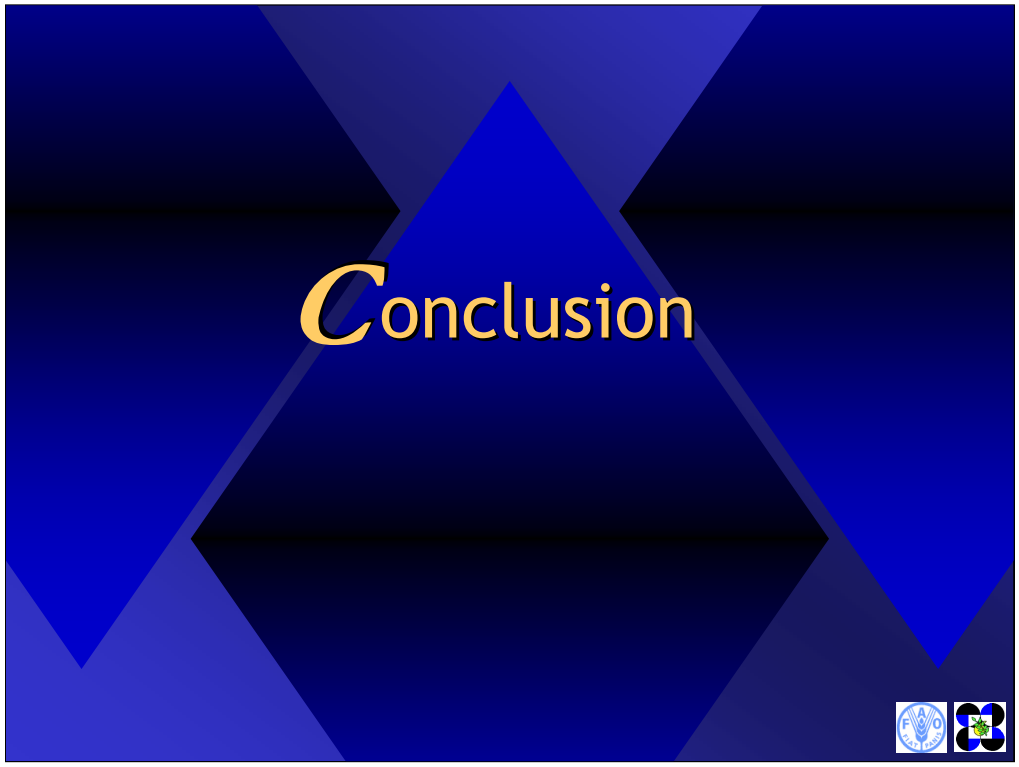
Deaths from Non-Communicable Diseases (NCD) such as diseases of the heart (including coronary artery disease and heart failure), diseases of the vascular system (e.g. strokes) and various cancers have exhibited a significantly increasing trend in the last 30 years

-- In 1975 diseases of the heart overtook other infectious diseases (i.e., gastroenteritis and colitis, diarrhea and measles) as third leading cause of death; in 1980, diseases of the heart overtook tuberculosis as the second leading cause of deaths; and the same overtook pneumonia as the number one cause of deaths in the country by 1990. In 2000, diseases of the heart, diseases of the vascular system and various cancers have ranked first, second and fourth among the leading causes of deaths in the country. Environment and other lifestyle related diseases (including chronic obstructive pulmonary diseases, other respiratory diseases as well as diabetes) which emerged as one of the leading causes of mortality in 1995, was the third leading cause of death.

-- The increasing trend in deaths from diseases of the heart may be associated with the changes in food consumption in the past 25 years, including increasing energy density with a greater proportion of fat to total energy and declining intake of fruits and vegetables and other traditional foods. This has also been associated with the high prevalence of smoking (2003 NNS revealed that 35% of Filipino adults were current smokers, and 10% were former smokers)

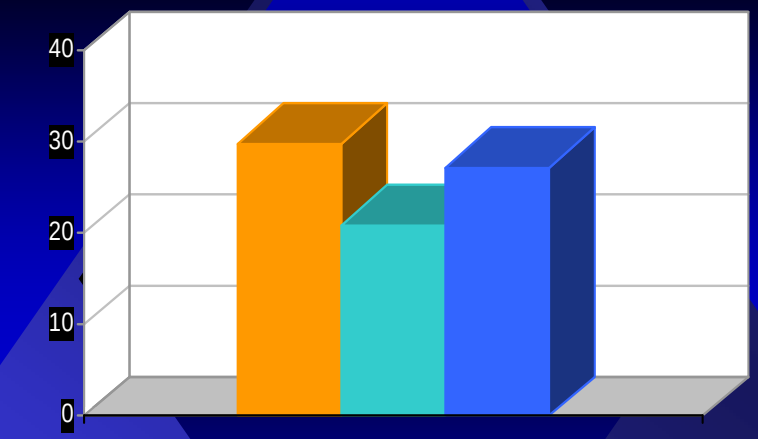


In 2000 through the present, diseases of the heart, diseases of the vascular system, various cancers, and environment and other lifestyle related diseases (including chronic obstructive pulmonary diseases, other respiratory diseases as well as diabetes) co-exist with pneumonias and tuberculosis among the leading causes of deaths …


Conclusion

Double burden of malnutrition

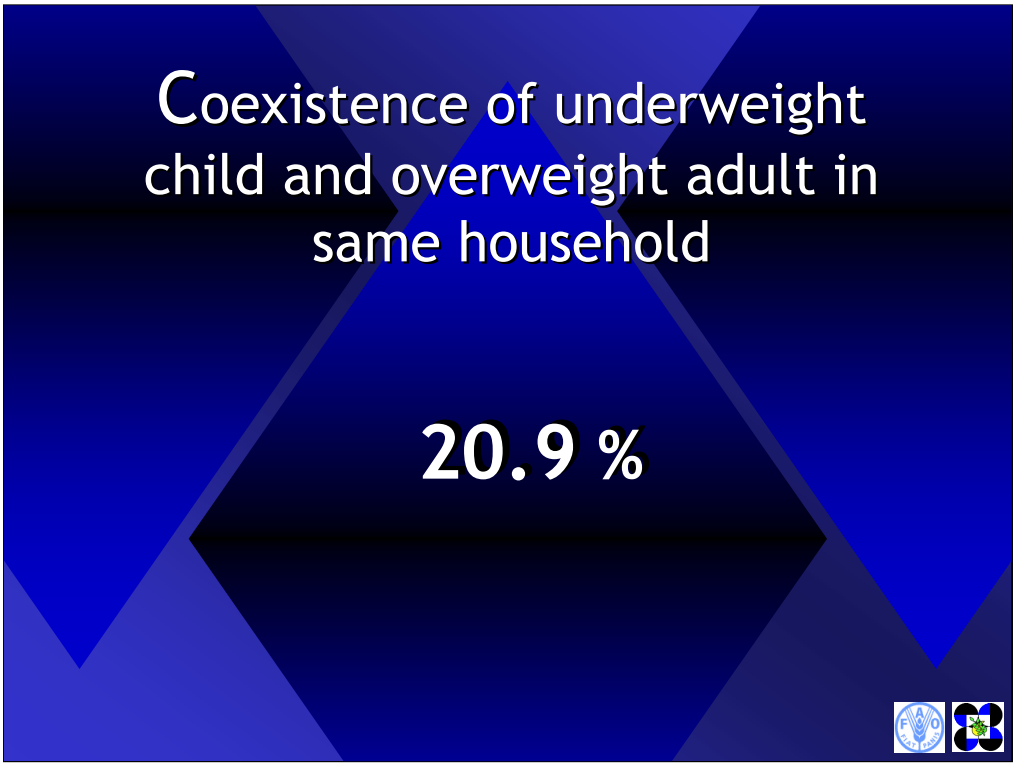
undernutrition in children and overweight among adults



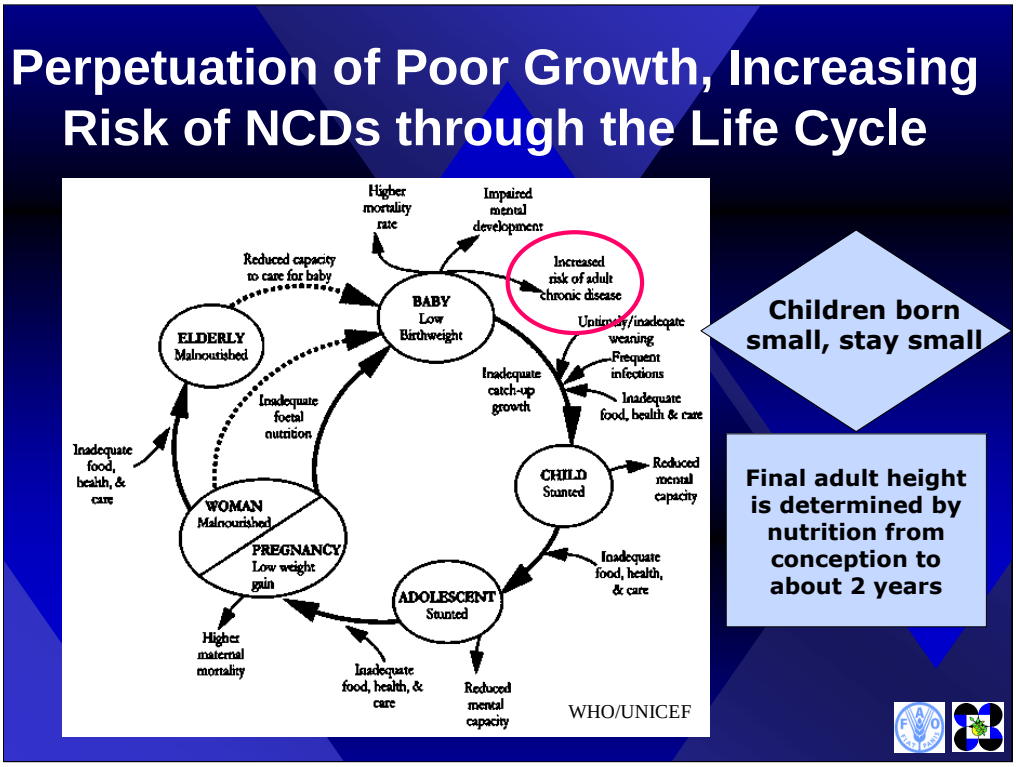
Double burden

Persistent undernutrition and micronutrient deficiencies among children and vulnerable groups,

along with rising overweight, obesity and diet- and lifestyle-related NCDs in adults.

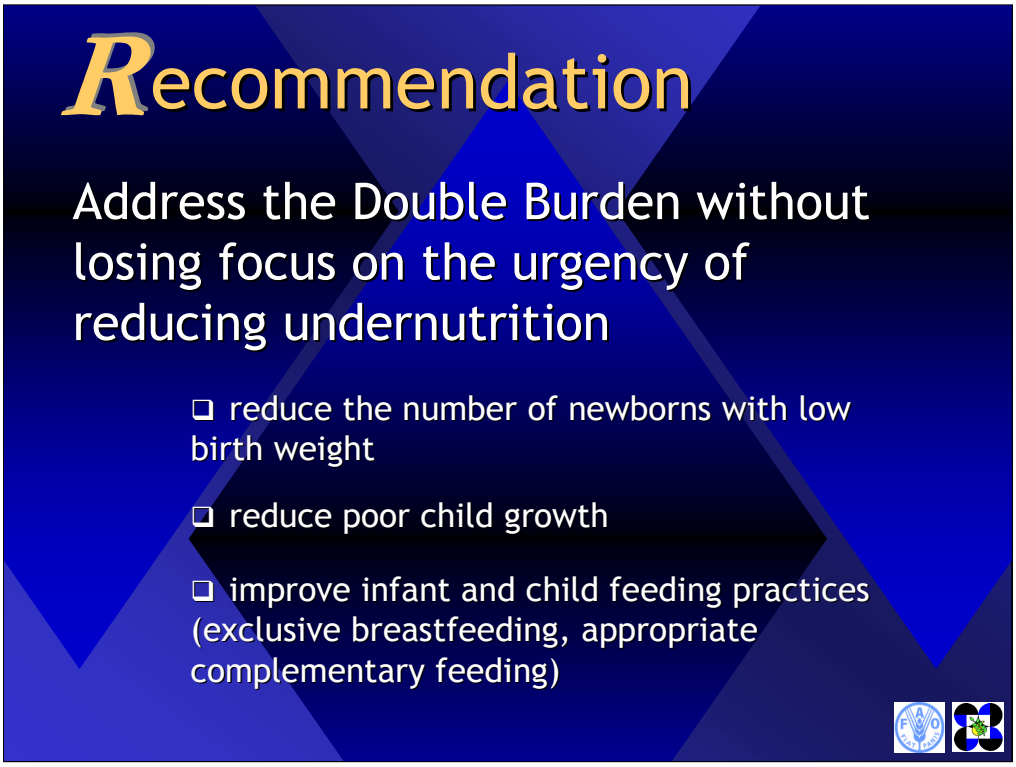


In one out of five households with an underweight child, there is a coexisting overweight adult.



Poor growth is perpetuated through the lifecycle.. A baby who is born small because of intrauterine growth retardation (in turn because his or her mother had poor nutritional status at pregnancy and pre-pregnancy) becomes a stunted and underweight child, a stunted adolescent and underweight adult, with compromised pregnancy outcomes when she becomes pregnant, perpetuating undernutrition in the lifecycle. According to WHO and UNICEF, children born small stay small, and the final adult height is determined in large part by nutrition nutrition from conception to age 2 years… From statistics reported in UNICEF's State of the World's Children, the incidence of low birthweight in the Philippines is 20% from 1998-2003 (it was only 9% from 1990-1997).

According to the Barker's hypothesis, fetal undernutrition also contributes to increased risk of adult chronic diseases. We are interested in looking at the association of adult stature (or the final adult height) and chronic diseases towards contributing to a better understanding of the Barker's hypothesis.

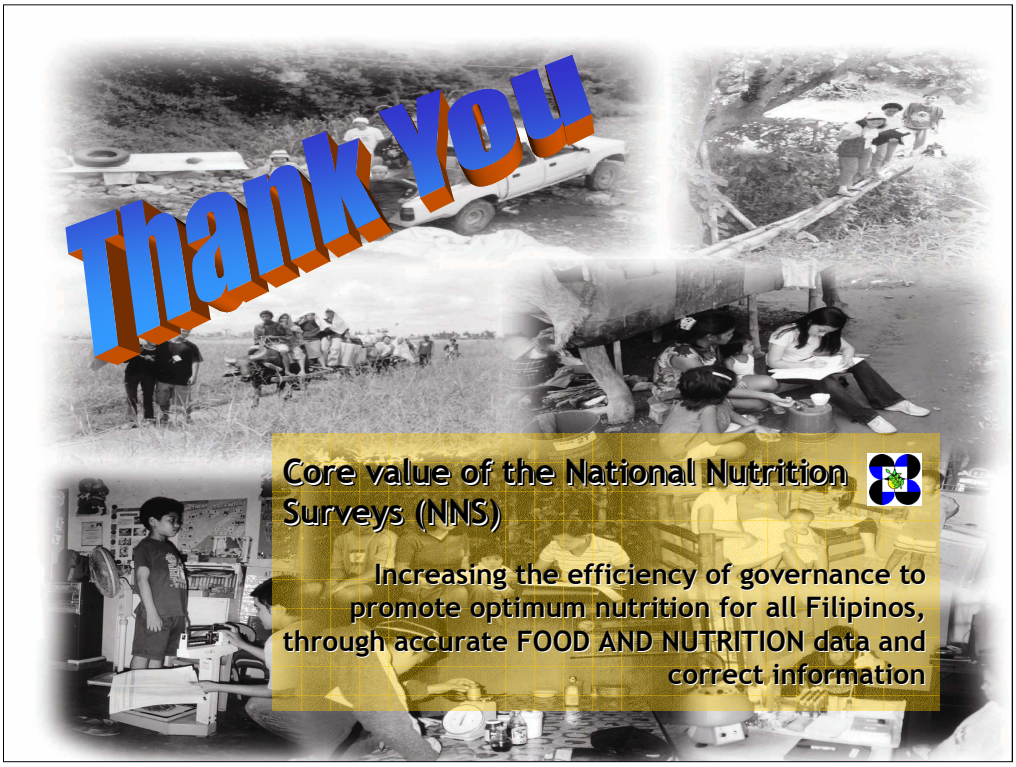


… Address the double burden without losing focus on the urgency of reducing undernutrition…

Recommendation

Address the Double Burden without losing focus in the urgency of curtailing undernutrition

- promote positive changes in dietary patterns (eg. increasing milk intake, consumption of fortified foods)
- reverse the negative changes in dietary patterns (eg. declining fruit intake, tubers and other traditional staples, increasing consumption of sugars)
- promote physical activity


Thank You
Core value of the National Nutrition Surveys (NNS)
Increasing the efficiency of governance to promote optimum nutrition for all Filipinos, through accurate FOOD AND NUTRITION data and correct information