

NUTRITION PROBLEMS IN INDONESIA

The article for

An Integrated International Seminar and Workshop on Lifestyle – Related Diseases
Gajah Mada University, 19 – 20 March, 2005

Atmarita, MPH, Dr.PH
Directorate of Community Nutrition, The Ministry of Health

Abstract

Hunger and malnutrition remain the most devastating problems facing the majority of the Indonesian, especially for the poor. Despite general improvements in food availability, health and social services, hunger and malnutrition exist in some form in almost every district in Indonesia. At present, about half the population is iron-deficient and one-third is at risk of iodine deficiency disorders. Vitamin A deficiency disorders still affect around 10 million children.

The prevalence of LBW infants in Indonesia is in a range of 7-14%, even reach 16% in some districts. The high prevalence of LBW is commonly a result of maternal malnutrition. It is at a range of 12 to 22% women aged 15-49 suffering from chronic energy deficiency (BMI <18.5), and 40% of pregnant women was anemic. In 2003, 27.5 percent of children under five in Indonesia suffered from moderate and severe underweight, or only 10 percentage points lower than in 1989, and nearly half are stunted. Malnourished children who suffer from low birth-weight and stunting in turn grow into malnourished adolescents and adults, thus perpetuating the malnutrition cycle.

In contrast, unbalanced food intakes that cause excessive consumption in association with changes in lifestyle that will effect to a range of non-communicable diseases also should be considered as emerging significant public health problem for Indonesia. The evidence of increasing mortality because of non-communicable diseases from 1986 to 2001 was obvious. Modifications in diet and life-styles including increasing physical activities and reducing cigarette smoking can be expected to reduce the incidence of these diseases.

Introduction

1. Perspectives

Promoting better eating habits and positive health behavior is one of the most challenging tasks in the overall effort to improve nutrition. Nutritional problems worldwide fall into two categories; those due to insufficient intake relative to needs and infections, and those due to excessive or unbalance intake of food. For developing countries, the highest nutritional priority is related to deficit food intake that affected nutritional deficiencies such as protein energy malnutrition, anemia, iodine deficiency disorders, vitamin A deficiency and other micronutrients. On the other hand, excessive and unbalanced intakes of food associated with changes in lifestyle are now becoming nutritional issues related to increasing number of overweight and obesity.

Indonesia as the world's fourth most populous country after China, India, and the United States, is full of contrasts. About 50% or more than 100 millions of the people are still suffering from various forms of nutritional deficiencies, and 15% of adult population are overweight and start increasing incidence of chronic non-communicable diseases such as coronary heart disease, various cancers, diabetes, and osteoporosis. Combating nutritional problems in Indonesia requires a range of strategies.

2. Geography, Demography and Socio-Economic Linkages

Indonesia is an archipelago in Southeast Asia consisting of 17,000 islands (6,000 inhabited) and straddling the equator. The total area is 741,096 sq mi (1,919,440 sq km). The largest islands are Sumatra, Jawa, Kalimantan, Sulawesi and Papua. Until 1999, the country was divided into 27 provinces, 296 districts/municipalities, 3625 sub-districts, and 67,033 villages. Starting in the year 2000 some areas split into new provinces, districts, sub-districts and villages. Indonesia is currently divided into 33 provinces, 440 districts, 5117 sub-districts and 72,000 villages.

The total population based on 2000 census data was 203.4 million people (214.6 million in 2004), which had increased 41.39% from the 1971 census. The adult population (15-49 years old) comprised more than half (55.07%) of the country's population while children 0-4 years old comprised 8.88% of the total population. The proportion of children (0-14 years old) is declining, just as the proportion of older persons (those age 50 years or over) is increasing. In 2003, 42% or 90 millions people are live in the cities. With an annual growth of 1.3%, the total population is estimated to reach 280 million by 2025.

Indonesia has 300 ethnics groups with literacy rate in 2003 was 89.8% (87.7% for women and 94.2% for men). GNP per capita (US\$) was 1,110 in 1997 (before crisis) and decreased to 647.7 in 2000 (after crisis), and increased again to 817 in 2002. The latest rank of Indonesian Human Development Index was 111 from assessment of 177 countries (HDR-UNDP, 2004). This rank is better than previous year indicated the improvements in literacy, life expectancy, and income per capita as well as reduction in poverty. Between 1999 and 2002, the proportion of people living in income poverty fell from 23% to 18% (IHDR, 2004).

Despite general improvements in health and social services, health and nutrition problems still exists in some form in almost every district in Indonesia. The existing health infra-

structure which consists of: a) 987 hospitals (government, army, state owned enterprise, and private); b) 32,955 primary health facilities (health center, sub-health center, mobile health center); and c) 267,883 community based health facilities (integrated services post, maternity post, and drug post) still create a programmatic intervention gaps because of geographic and demographic variations.

The spectrum of malnutrition in Indonesia

Hunger and malnutrition remain the most devastating problems facing the majority of the Indonesian, especially for the poor. Malnutrition affects all age groups across the entire lifespan. At present, malnutrition includes a spectrum of nutrient-related disorders, deficiencies and conditions creating major public health problems: intra-uterine growth retardation, protein energy malnutrition, iodine deficiency disorders, vitamin A deficiency, iron-deficiency anemia, obesity and other diet-related non-communicable diseases. Other specific nutritional deficiencies also start exposing Indonesian such as: folate deficiency, zinc deficiency, calcium deficiency and osteoporosis.

1. Low Birth Weight (LBW) Babies and Maternal Malnutrition

Indonesia has limited information for LBW babies. The only available data on LBW prevalence was from the Demographic and Health Survey (DHS). As shown in Table 1, the national figure in 1986 to 1997 was about 7-8%, with provincial range between 4 to 16%. The small scale studies (Jakarta, South Sulawesi, Makassar, West Java, Ciawi, Indramayu) documented the rates of LBW babies range from 9 to 16%. (BPS, 2000).

Table 1. Trend in Proportion of Low Birth Weight Babies (<2.5 Kg) – DHS

	1986-1991	1989-1994	1992-1997
National	7.3	7.1	7.7
Urban		6.8	6.6
Rural		7.3	8.4
Provincial Range		2.3-16.7	3.6-15.6

Source: Demographic and Health Survey 1991, 1994, and 1997

The scarcity of data on maternal nutrition – other than anemia – is in itself an indicator that nutritional maternal health care is still lack of attention. Maternal nutritional status was measured using mid-arm circumference (MUAC) and body mass index (BMI). The cut-off point of <23.5 cm of MUAC applies to identify risk of CED, and cut off point of BMI <18.5 is used to identify CED. Figure 1 and 2 presented the prevalence of risk of CED and prevalence of CED among women 15 to 49 years. The trends of CED and the risk of CED are the same; the rate is higher in younger women than in older women. In general, the rate of CED among women is about 12%, it ranges from 22% in younger age to 10% in older age. The higher rate of CED among younger women (15-19 year) could be one of the risk factors of high rate of LBW which will continue to underweight and stunting among pre-school children and school aged children. Besides, LBW infants, this maternal malnutrition is also causing higher rate of anemic infants and stunted children. In 2001 survey indicated >60% infants (<12 months) anemic, and persistent high prevalence (above 40%) for children under five are stunted. Malnourished children who suffer from

low-birth weight and stunting in turn grow into malnourished adolescents and adults, thus perpetuating the malnutrition cycle.

Figure 1. Trend in Prevalence of risk of CED (MUAC <23.5 cm) among Women aged 15-49 years (Susenas 1999-2003)

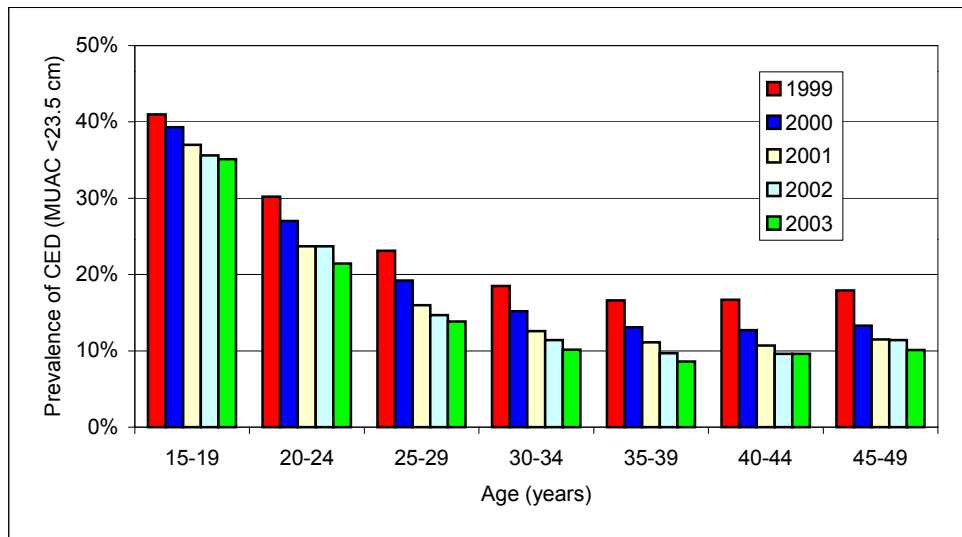
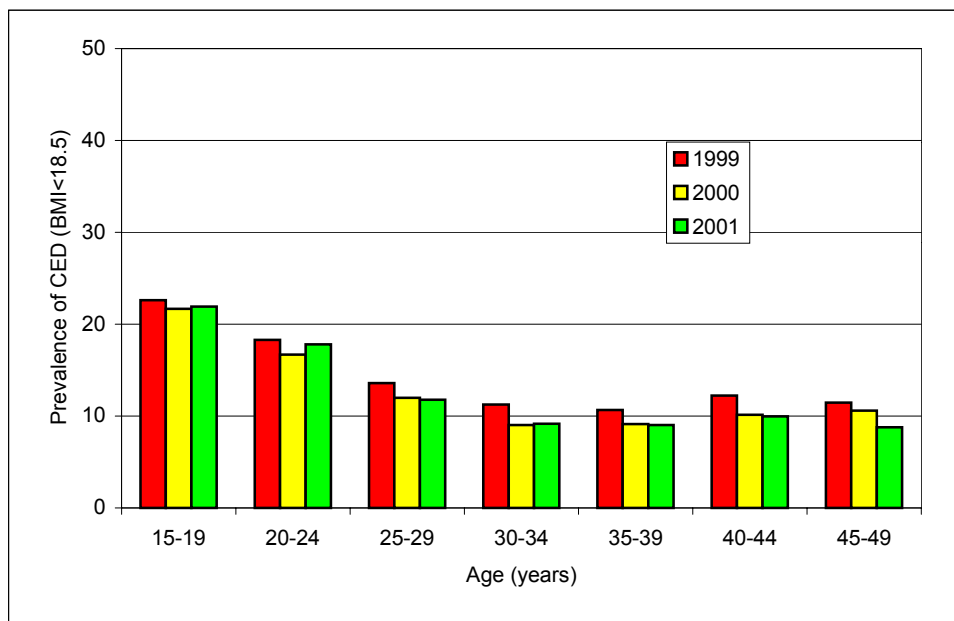


Figure 2. Trend in Prevalence of CED (BMI <18.5) women 15-49 years (Rural Areas, NSS-HKI 1999-2001)



2. Underweight, Stunting and Wasting among pre-school children

Despite the energetic effort of the program to empower communities, and ensure that the country had sufficient energy available for consumption, the weight of pre-school children remained below the international reference standard as can be seen in table 2. And while the rates of moderate malnutrition (underweight children) decreased through the 1990's, the prevalence of severely underweight children increased. Overall, efforts over the last 14 years have reduced the proportion of underweight of pre-school children by about only 10

percentage points: 37.5% (1989) to 27.5% (2003) or with average rate of reduction less than 1% per year.

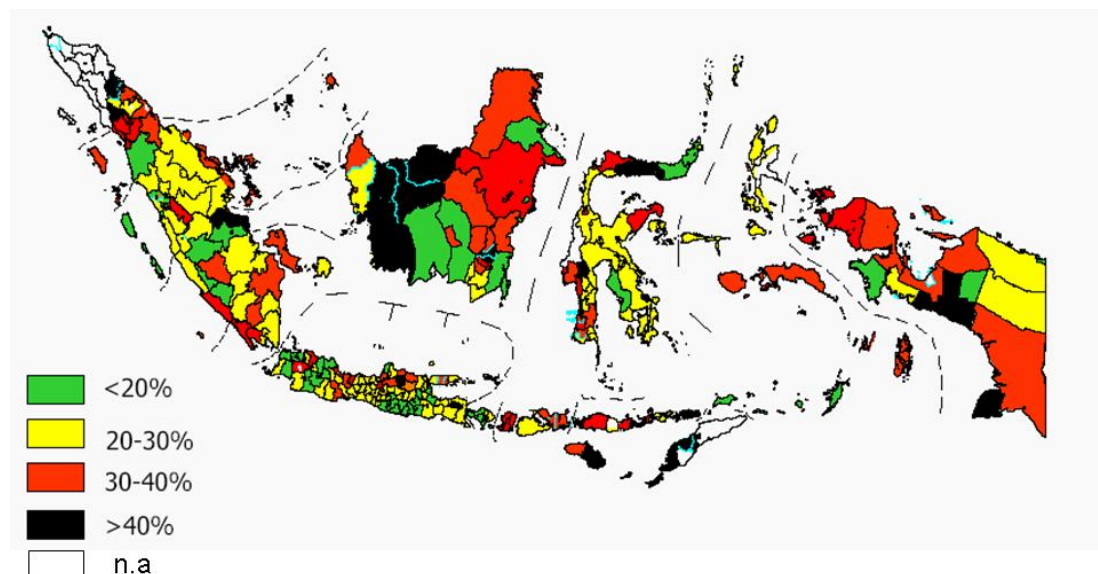
Table 2. Trend in Prevalence of Underweight in Indonesia 1989–2003
(Weight for age < -2 SD, and < -3SD)

	1989	1992	1995	1998	1999	2000	2001	2002	2003
< -2 SD (Underweight)	37.5	35.5	31.6	29.5	26.4	24.6%	26.1	27.3	27.5
< -3 SD (Severely underweight)	6.3	7.2	11.6	10.5	8.1%	7.5	6.3	8.0	8.3

Source: Susenas Data sets, Nutritional Status Component, 1989-2003

With a diverse population of 210 million, underweight rates vary across districts. Figure 3 showed the prevalence differences between districts that estimate the proportion of pre-school children were moderately or severely underweight range from under 20% to over 40%. The district differences in underweight are reflecting wide variation in the IMR between different parts of the country. Even though the national figure for IMR was 35 per 1000 live births, there were 24% of total districts of Indonesia with the rate of above 50 per 1000 live births. These regional differences reflect the broad diversity of Indonesia's society and conditions.

Figure 3. The prevalence of underweight among pre-school children, 2003



The trend data on stunting among pre-school children also show no changes over time. The prevalence even has been increasing to over than 40% since the 1990's (see Table 3). The higher rate is observed not only on underweight and stunting but also wasting. This implies that nutrition problem in young and school children are still a serious public health problem. Table 4 presented the prevalence of wasting among pre-school children from several evidences. Considering that this problem has implication on the children educability, the seriousness of nutrition problem should also be considered as an education problem.

Table 3. Trend in Prevalence of Stunting pre-school children (1990-2001)

	IBT, 1990	Suvita, 1992	SKIA, 1995	NSS, 2001
Boys	47.0	42.5	46.5	46.6
Girls	41.9	40.2	45.2	45.5
Urban			36.5	
Rural			49.2	
Total	44.5	41.4	45.9	45.6

Source: Eastern Island Survey (IBT, 1990); National Vitamin A survey (Suvita, 1992); Mother and Child Survey (SKIA, 1995); Nutrition & Health Surveillance Survey – HKI, Rural areas (NSS, 2001).

Table 4. Trend in Prevalence of Wasting pre-school children (1990-2001)

	IBT, 90	Suvita, 1992	SKIA,1995	SKRT 1995	Ev.JPS 1999	SKRT 2001
Boys	10.8	9.5	13.9	13.3		16.9
Girls	8.7	7.6	12.7	10		14.5
Urban			13.5		14.0	15.2
Rural			13.3		13.7	16.2
Total	9.7	8.6	13.4	11.6	13.7	15.8

Source: Eastern Island Survey (IBT, 1990); National Vitamin A survey (Suvita, 1992); Mother and Child Survey (SKIA, 1995); National Health and Household Survey (SKRT, 1995 & 2001), Survey on impact of Social Safety Net Project (Ev.JPS, 1999)

3. Trend of Micronutrient Deficiencies

Since 1970s, there had been positive trend showing decline in prevalence of micronutrient deficiencies. However, the data indicates increasing prevalence during the economic crisis in 1997/1998. The crisis affected a progressive reduction on food consumption as well as the procurement and distribution of micronutrient supplements namely vitamin A capsule, iron tablets, and iodine capsule. The current assessment shows that deficits in three main micronutrients: vitamin A, iron and iodine deficiencies affected more than 50% of total population.

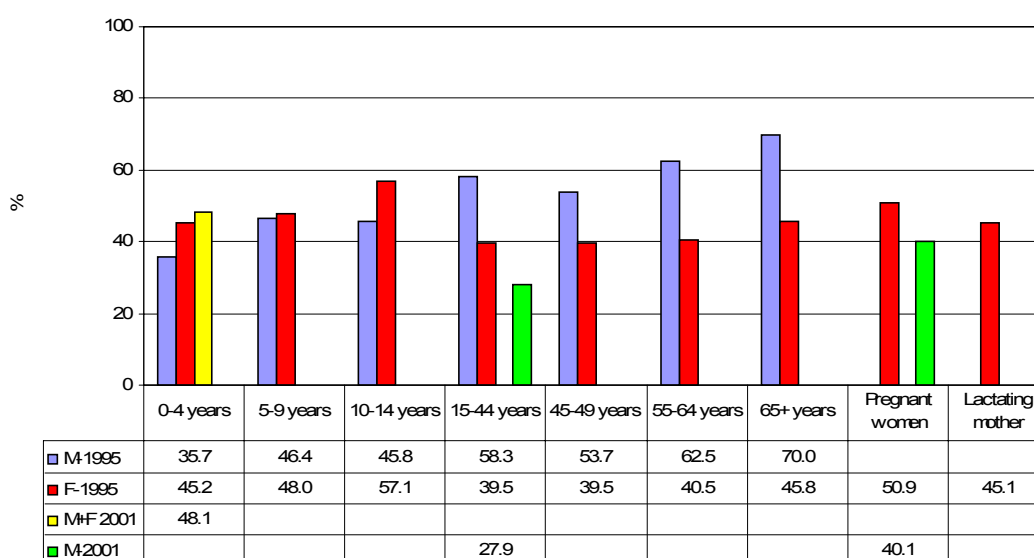
Vitamin A Deficiency (VAD)

A nutrition survey conducted in Indonesia in early 1970s revealed that the prevalence of VAD was very high.. Indonesia was one of the first developing countries to identify that high levels of severe VAD constituted a serious public health problem and began to implement programs to eliminate the problem since the 1970s (HKI, 2000). Since 1970s to 1990s, Indonesia embarked on a nation-wide vitamin A intervention program by providing high-dose vitamin A capsule twice a year to almost all under-five children. Within two decades, the program successfully reduced the clinical prevalence of VAD (Xerophthalmia) to 0.33% in 1992, a level in which VAD was no longer considered as a public health problem. However, at the sub-clinical level, 50% of the children under fives still had low serum retinol (<20 µg/dl). Unfortunately, there is no national data available beyond 1992 on VAD prevalence in Indonesia, except scattered small studies by HKI in recent years. What is the current magnitude of VAD prevalence in Indonesia is difficult to speculate.

Iron Deficiency Anemia (IDA)

The available information for IDA is based on the National Health and Household Survey (NHHS) 1995 and 2001. The hemoglobin level is used as indicator which reflects any form of anemia. However, IDA is assumed to be highest proportion of anemia in the country. Figure 4 shows the prevalence of IDA reduced for pregnant women from 50.9% (1995) to 40% in 2001 as well as women aged 15-44 years from 39.5% (1995) to 27.9% (2001). This is assumed due to iron supplementation program for pregnant women and women at reproductive age. However, for children under-fives the IDA rate increased from 40% (1995) to 48.1% (2001), particularly it is very high (>55%) in the younger children (<24 months). This trend seems to correlate with the declining quality of household food consumption, including low quality of complementary food for young children.

Figure 4. Prevalence of Iron Deficiency Anemia (NHHS 1995 and 2001)



Iodine Deficiency Disorders (IDD)

The overall goiter prevalence in the country has decreased from 30% in 1980 to 27.9 in 1990 and to 11.1% in 2003. The significant decline in the prevalence of goiter in the last decade primarily was due to the intensified IDD control program. However, IDD national survey in 1998 and 2003 indicated the direction of changes in prevalence. The prevalence of goiter in 14 severe endemic districts was decreased by 18.7% from 1998 to 2003. However, 68 out of 254 districts categorized as non-endemic, mild and moderate endemic in 1998 becoming worse-off in 2003. Whereas, 50 out of 146 districts categorized as mild to severe endemic areas in 1998 becoming better-off in 2003 (see figure 5). There are several pockets of high IDD prevalence in areas where inadequate iodized salt consumption was reported.

Figure 5. Total Goiter Rate (TGR) at 268 districts from surveys in 1996/1998 and 2003

		Classification of TGR in 1998				Total
		Non Endemic	Mild	Moderate	Severe	
Classification of TGR in 2003	Non Endemic	86	26	2	1	115
	Mild	28	52	13	3	96
	Moderate	5	18	7	5	35
	Severe	3	8	6	5	22
	Total	122	104	28	14	268
		Unchanged	150			
	Worsened	68				
	Improved	50				

Source: National IDD survey 1998, and National IDD evaluation survey 2003

Other Micronutrient Deficiencies

Other micronutrient deficiencies found in developing countries primarily are zinc and folic acid deficiencies. Unfortunately, Indonesia has no large scale data on these deficiencies. However, some scale studies indicates potential deficiencies of zinc and folic acid that cause congenital defects in newborns among pregnant women with poor nutritional status or micronutrient deficiencies. Zinc serum deficiency in pregnant women is suspected to increase the risk of obstetric complication and the risk of congenital lip and palate deformities. A study in East Nusa Tenggara (1996) revealed an average of 71% pregnant women suffer from zinc serum deficiency (<7 µg/dl). Another study in Central Java also showed the prevalence of zinc serum deficiency around 70-90%. A small-scale study (1997-1999) in West Java, Central Java and Lombok showed the prevalence of zinc deficiency among infants was from 6 to 39%. (Satoto, 1999).

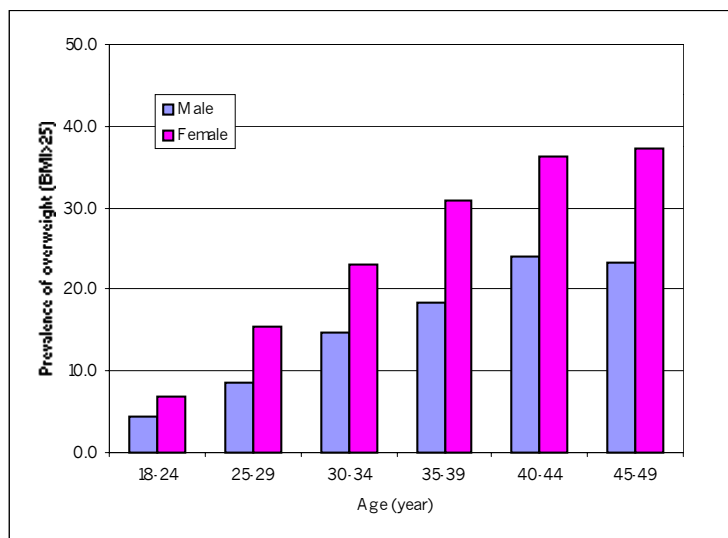
Although, specific study on folic acid deficiency has not been carried out in Indonesia, the empirical data from studies in other developing countries demonstrated positive correlation between the prevalence of folic acid deficiency and the prevalence of IDA. According to WHO, folic acid deficiency is a risk factor for neural tube defect that lead to mental retardation and growth failure in children. In addition folic acid deficiency also causes elevated plasma homocysteine that lead cardiovascular disease.

4. Overweight and Obesity

Evidence is now emerging to suggest that the prevalence of overweight and obesity is already a massive global pattern including Indonesia, and increasing worldwide at an alarming rate. Indonesia has limited information for overweight of all age groups. The first national survey was in 1996/1997 collected data on BMI of adult male and female in urban areas (27 cities). It was found that the rate of overweight (BMI >25¹) among adult male was 14.9% while adult female was 24.0%. The problem of overweight was also found higher among the older age group. The overweight problem in rural areas was estimated based on NSS-HKI data in 1999 to 2001 only for adult female. The same pattern as in urban areas was observed, however, the magnitude of problem was lower than their counterpart in rural areas. See figure 6 and 7.

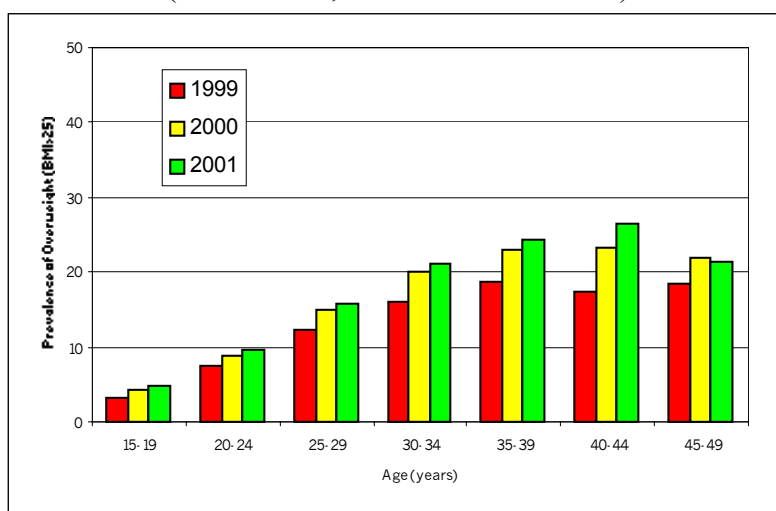
¹ The overweight for Indonesian has classified as BMI >25 and BMI >27 for obesity.

Figure 6. Trend in Prevalence of overweight among Adult >18 years
27 cities, 1996/1997



Source: National Survey in 1996/1997 in the 27 cities in Indonesia, MOH

Figure 7. Trend in Prevalence of Overweight among Adult Women
(Rural Areas, NSS-HKI 1999-2001)



Source: NSS-HKI data sets

In many developing countries as well as in Indonesia, over-nutrition co-exists with under-nutrition (BMI <18.5). The assessment from HKI data sets that were collected in 1999 and 2001 both in urban slum areas and rural areas showed the risk of “double burden” among the female adult population. Figure 8 presented increasing trend for the prevalence of BMI ≥ 30 among women who are live in urban slum and at the same time the prevalence of BMI <18.5 still at high rate even though the prevalence was decreased. The same pattern in rural areas, but the rate is lower than urban slum areas (Figure 9).

Figure 8. Trend BMI <18.5 and BMI \geq 30 among female 15-44 years Urban slum areas 1999 and 2001 (NSS-HKI data sets)

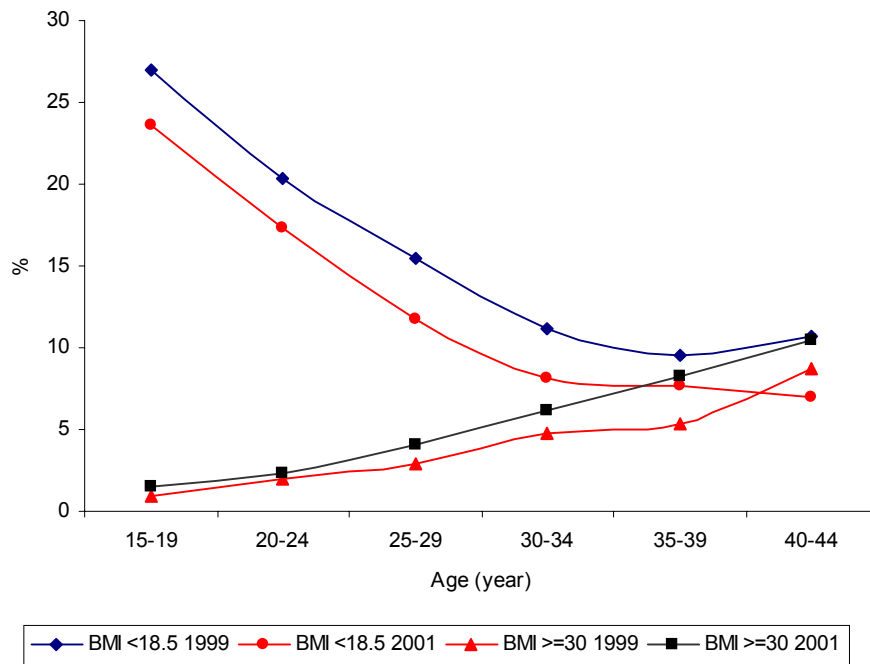
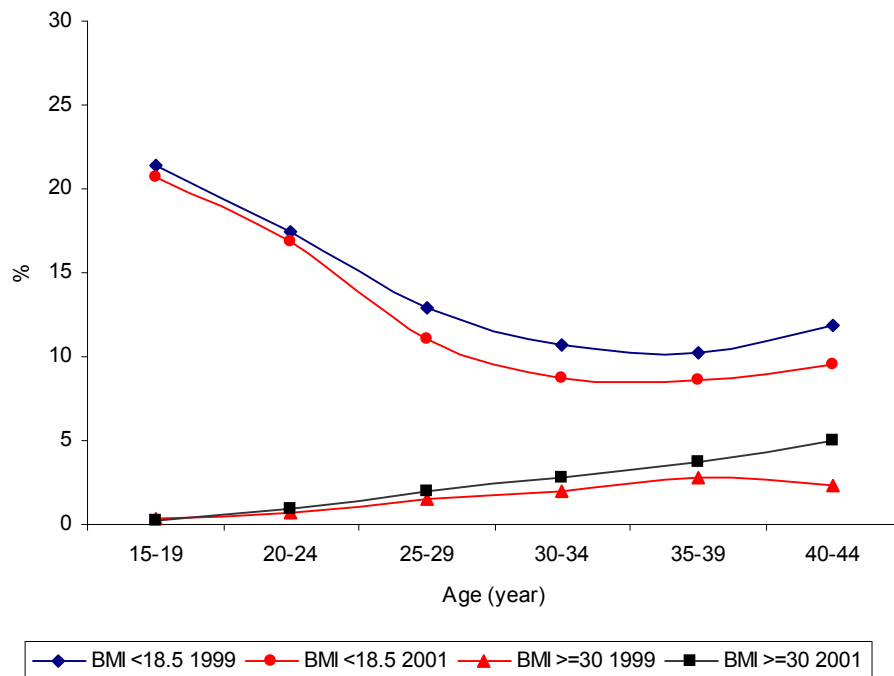


Figure 9. Trend BMI <18.5 and BMI \geq 30 among female 15-44 years Rural areas 1999 and 2001 (NSS-HKI data sets)



Over-nutrition is a significant risk factor for a range of serious non-communicable diseases, e.g cardiovascular disease (CVD), hypertension and stroke, diabetes mellitus, various forms of cancer, and other gastrointestinal and liver diseases, and other serious health problems.

National survey on morbidity for the non-communicable diseases has never been conducted; however, the national health and household survey 1980 to 2001 estimated the specific mortality rate of non-communicable disease increase from 15.41% (1980) to 48.53% (2001). The proportion of death because of CVD increased from 9.1% (1986) to 26.3% (2001); Ishaemic heart disease from 2.5% (1986) to 14.9% (2001); stroke from 5.5% (1986) to 11.5% (2001) and cancer from 3.4% (1986) to 6% (2001).

Dietary patterns and lifestyle factors affecting health

1. Dietary patterns

Dietary patterns are important factors contributing to nutrition and health status. Modifications in diet can be expected to reduce the risk of disease and, in some cases, prevent it. Diets that are inadequate in energy and certain nutrients can lead to serious deficiencies diseases even death. Although concern about dietary deficiency remains a priority in many parts of the world, the focus in the present context is on dietary patterns reflecting excessive or unbalanced intakes and diet-related non-communicable diseases, both of which are of growing global public health importance.

The information for dietary patterns in Indonesia can be assessed from regular socio-economic survey (SUSENS) conducted by Statistic department. The food intake from this data set is translated from one month expenditure of household food consumption. Figure 10 explains the ratio for each food item to total expenditures at household level from 1995 to 2003, and figure 11 differentiates between rural and urban areas in 2003. From this information, the major source of Indonesian food consumption is come from cereals, followed by others. Figure 12 showed more obvious about the variation of food consumed at household level. There is a tendency increasing prepared food consumption from 1995 to 2003, and urban population has a tendency to consume more prepared food than rural population.

Figure 10. The average expenditure of each food item to total expenditure at household level, Susenas 1995, 2000, 2003

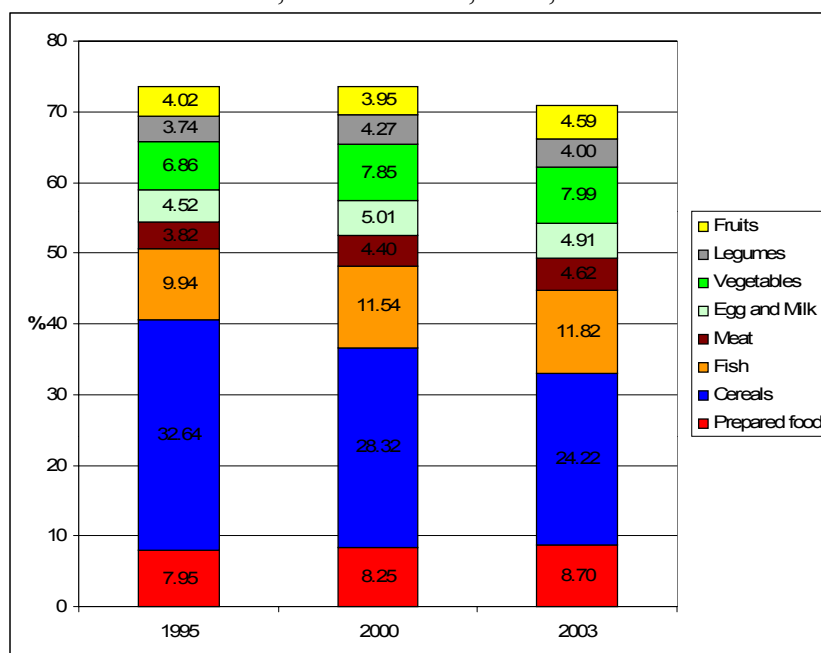


Figure 11. The average expenditure of each food item to total expenditure at household level by urban and rural, Susenas 2003

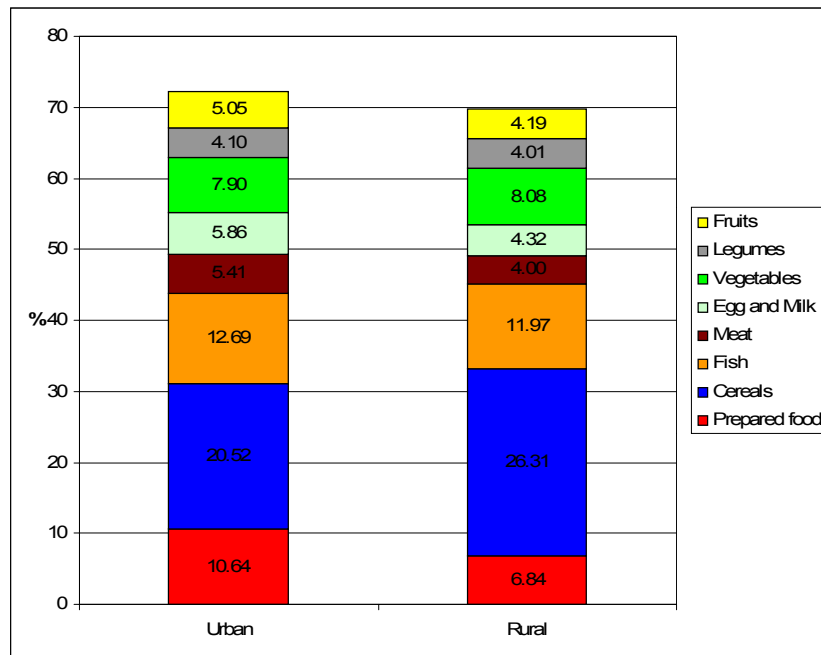
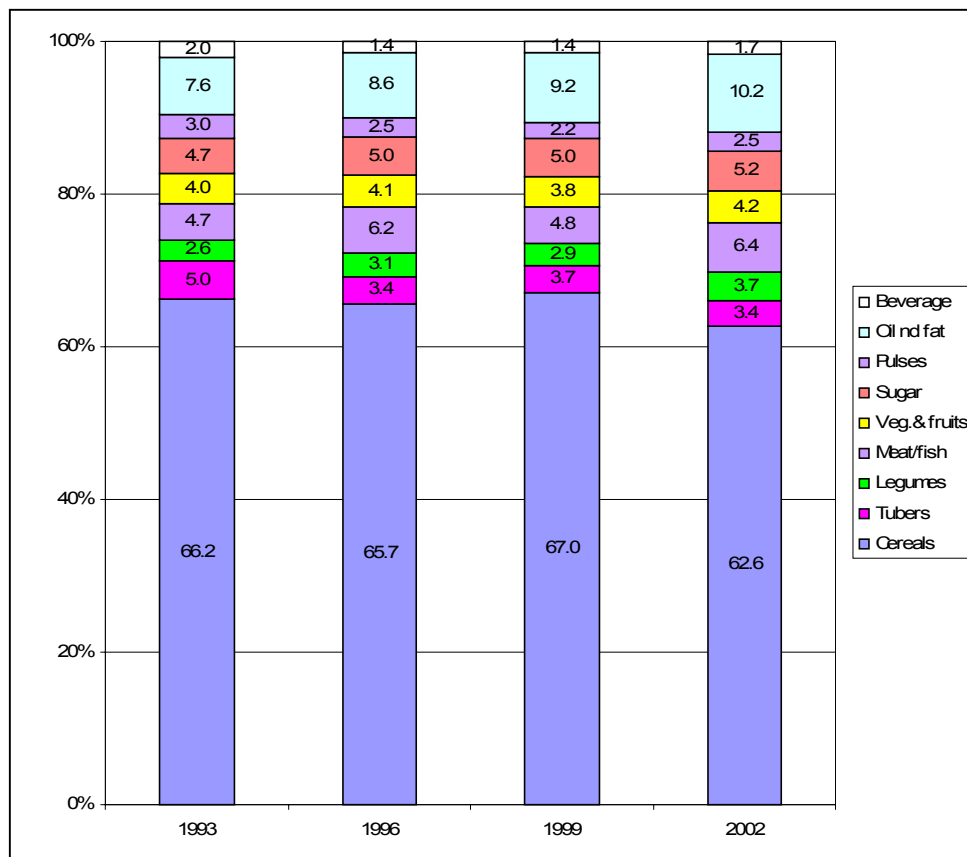


Figure 12. Food consumption variation at household levels, Susenas 1993 to 2002



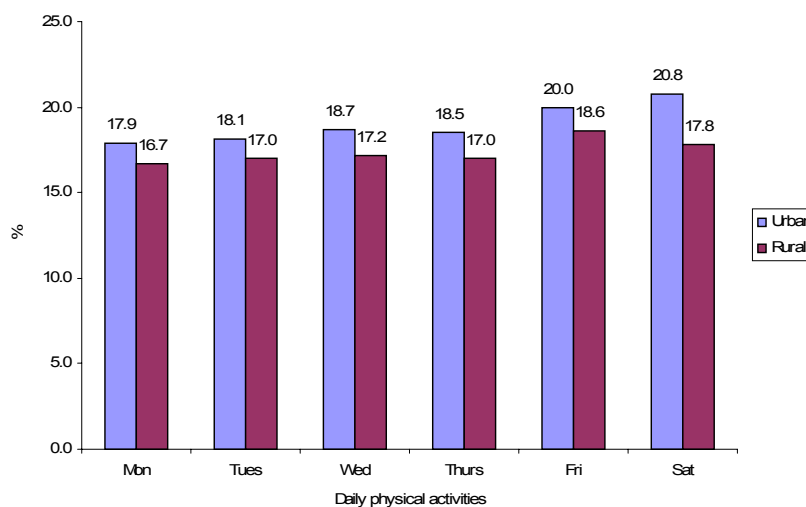
The above figures explained that the quality of food consumption is still unbalanced. The higher proportion of cereals consumed usually explained that poverty is one of major issues to cause malnutrition. The evidence of increasing prepared food contributes to increasing overweight which explains a tendency of people eating out, especially for urban population.

2. Physical activity and Tobacco use

Regular physical activity, whether related to an occupation or part of leisure-time activities, is an important component of healthy life styles. Regular exercise stimulates cardiovascular and respiratory functions, increases blood supply to the heart muscle; regulates energy balance, stimulates the secretion of growth factors, and improves psychomotor development. In contrast physical inactivity may have adverse consequences including overweight.

The information for physical activity is very limited for Indonesia. In 2003, Susenas provided one variable that asking people over 10 years old whether they do physical activity more than 30 minutes everyday besides their regular activities. As shows in figure 13, it is only 19% (in average) urban population do regular physical activity and 17% for rural population.

Figure 13
Percentage of daily physical activity for urban and rural population, Susenas 2003



Another issue for healthy life style is smoking. It is well known that smoking is related to the leading causes of premature death in adults in developed countries and also a major problem in developing countries as well. Smokers are sick more than non-smokers, and they lose 33 to 45% more work days. Smoking also contributes to mortality from cancer. In Indonesia, the proportion of cigarette smoking is increasing, and in 2003, 40.7% male above 10 years are smokers.

The household expenditure for cigarette increased from 9.15% (1995), to 10.03% (2000), and became 13.15% (2003). Further analysis from Susenas 2003 data set for cigarette expenditure found that 27% of total districts in Indonesia where household spent more

than 15% of their expenditure for smoking, and 61% of total districts where the household spent between 10 to 15% of their expenditure for smoking.

Conclusion

In general, Indonesia has marked good progress in health status over the past three decades. The life expectancy improved, infant and child mortality rates have decreased significantly. In terms of nutrition and its relation to health, the first concern of national authorities must be securing all involved sectors of the population to prevent deficiencies of macro and micro nutrients. This is the highest nutrition priority where nutritional deficiencies are among the most pressing public health problems.

On the other hand, unbalanced food intakes that cause excessive consumption in association with changes in lifestyle that will effect to a range of non-communicable diseases also should be considered as emerging significant public health problem. Modifications in diet and life-styles including increasing physical activities and reducing cigarette smoking can be expected to reduce the incidence of these diseases.

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