

Original Article

Policies in alleviating micronutrient deficiencies: Indonesia's experience

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Introduction

The Declaration of the Alma-Ata Conference on Primary Health Care in 1978 states that 'health, which is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, is a fundamental human right and ... the attainment of the highest possible level of health is a most important world-wide social goal'.¹ In recognition of the importance of nutrition and of promoting the health status of human beings, especially among women and children as regards the welfare of the whole family, the government of Indonesia (MOH) – Directorate of Community Nutrition has implemented several preventive and corrective nutrition programmes to reduce infant, child and maternal mortality over the past 35 years. The Nutrition Intervention Programme was developed as a part of a health programme, on the basis of sound scientific data, to cover the four major nutritional problems in this country including protein energy malnutrition (PEM), iron deficiency anaemia (IDA), iodine deficiency disorders (IDD) and vitamin A deficiency (VAD).

Indonesia has also committed to provide the minimum standards of health care for children and women, as proposed in the plan of action for implementing the 1990 World Summit for Children Declaration, the Convention on the Rights of the Child (CRC), and the Convention on Elimination of All Forms of Discrimination Against Women (CEDAW), which was made law in 1984. As a member country of the World International Organization, Indonesia should ratify a global commitment to fill a national requirement for development of a food and nutrition action plan.

Indonesia: A brief overview

The Republic of Indonesia is made up of more than 17 000 islands, located between Asia and Australia. Over 80% of Indonesia's territory is covered by water. The total land area is approximately 1.9 million km² (780 000 square miles); and by the year 2005 the inhabitants will number an estimated 225.7 million, which makes Indonesia the fourth most populated country in the world after China, India, and the USA. The 1997 estimate of total population was already 207 million, inclusive of 22 million children under 5 years of

age (0–5) and 52 million women of reproductive age, aged 15–49.^{2,3}

Indonesia has a tropical climate with two seasons. The dry season takes place between May and October, and the rainy season takes place between November and April. The country is administratively divided into 27 provinces. New provinces have been formed in line with the current reformation era. Each province consists of districts in the form of regencies and municipalities. In total there are 249 regencies and 65 municipalities. The next lower administrative units are the subdistrict and the village. In 1997 there were 4028 subdistricts and 66 925 villages.⁴

A period of great economic growth was experienced from 1968 to 1986, when per capita income increased sharply from approximately US\$50 to US\$385; and in 1996 the per capita income was US\$1124.^{5,6} All of these achievements ended in mid-1997 when Asia's economy collapsed and the value of the Indonesian local currency plummeted, prices increased, and unemployment rose dramatically. At the same time parts of the country suffered from relatively long droughts and extensive forest fires. This had the effect of worsening the nutritional status of the community, as shown by the dramatic increase in the number of severe malnourished children throughout this country.

Reduction of infant, child, and maternal mortality rates

Infant and child mortality rates have fallen significantly in every province in Indonesia since 1977. Improvement in basic services and the use of low-cost, preventive and curative health technologies have saved the lives of millions of children in the past 20 years. However, urban rural differences are still profound, according to the 1997 Indonesia Demographic Health Survey (IDHS) data. Infant mortality rates (IMR) vary between 35.7 deaths per 1000 live births in urban areas and 58 deaths per 1000 live births in rural

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areas; child mortality rates (CMR) vary between 12.37 deaths per 1000 live births in urban areas and 21.87 deaths per 1000 live births in rural areas.⁵ Figure 1 details the trends in IMR, CMR, and under-5s (U5MR) in the past 20 years.

The same trend did not apply to the maternal mortality ratio (MMR) figure. Programmes and interventions to improve access on maternal health services have not succeeded in reducing the high MMR. The 1994 IDHS data estimate of maternal mortality ratio (MMR) was 390 maternal deaths per 100 000 live births, referring to the years 1989–1994 as its reference period (Table 1).^{7,8}

Theoretical framework of nutrition problems⁶

The nutritional status of the family, which is reflected in the survival of women and children, is determined by a number of factors acting at different levels. The three broad levels of determinants are: immediate; underlying; and basic.⁵ Interventions to address a specific health issue may act at one

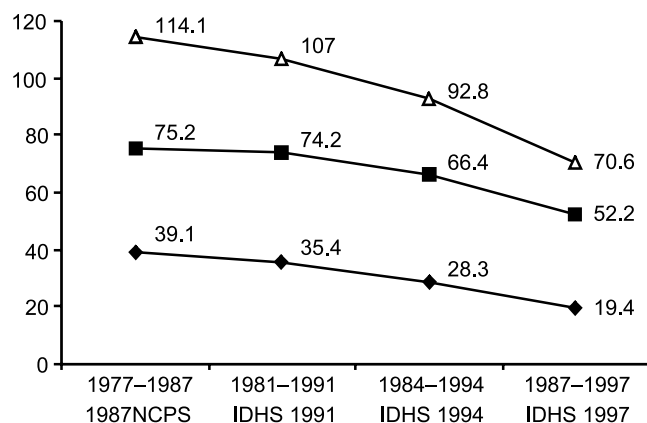


Figure 1. Trends in infant, child and under-5 mortalities in Indonesia (1977–1997). (◆), CMR (0–1 years); (■), IMR (1–5 years); (△), U5MR (0–5 years). CMR, Children Mortality Rate (1–5 years); IMR, Infant Mortality Rate (0–1 years); U5MR, Underfives Mortality Rate (0–5 years). Source: Central Bureau of Statistic and Ministry of Health RI, 1998.

level only, or may act in parallel at a number of different levels. They affect health status to varying degrees at the individual, household, and community and society levels. These three levels of determinants also have an effect at different levels within the health paradigm (physical health, mental health, and social health; Fig 2).

Nutritional challenges in Indonesia

Nutritional problems (PEM, chronic energy deficiency (CED), IDA, VAD, IDD) are still considered to be public health problems, despite the dramatic decrease in their prevalence during the past 20 years. Moreover, a problem associated with ‘over-nutrition’ is currently causing nutritional problems particularly in the urban population. This

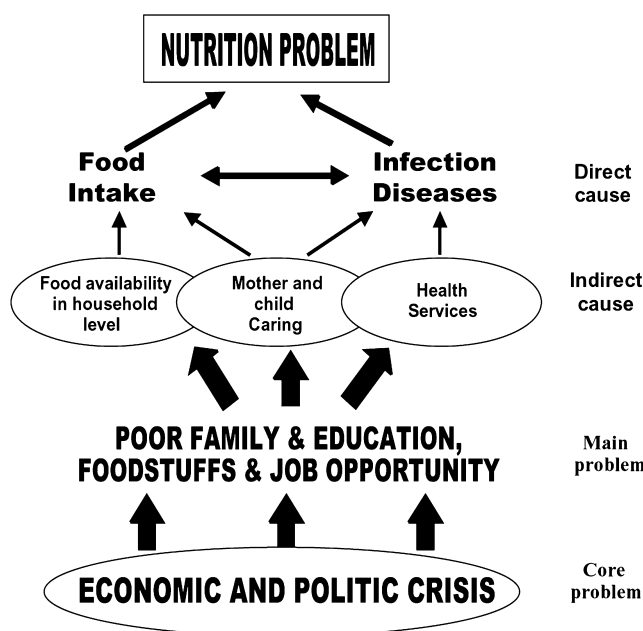


Figure 2. Theoretical framework of nutrition and immunization problems. Source: UNICEF. *The Crisis Surveillance Nutritional Health Economic Changes and Input for Policies Indonesia*, Jakarta 1999.

Table 1. Estimate of MMR in selected areas in Indonesia

	MMR	Time reference	Type/area of study	Source
Indonesia	370	1978–1980	12 hospitals	Chen <i>et al.</i> (1981) Budiarmo (1986)
HHS 1985	450	1985	Retrospective (direct), 7 provinces	Kosen and Soemantri (1994)
HHS 1992	455	1991	Prospective	Badan Litbang and LDUI (1994)
IDHS 1994	404	1991	Retrospective	CBS, NFPCB, MOH, and MI (1995)
	390	1989–1994	Sisterhood (direct)	Soemantri (1997)
	360	1984–1988	Sisterhood (direct)	
	326	1981–1982	Sisterhood (indirect)	
HHS 1995	306–334	1990		

MMR, maternal mortality ratio; HHS, Household Health Survey; Badan Litbang, research and development body; LDUI, Demographic Institute University of Indonesia.

Sources: 1. Budiarmo – Institute of Research and Development, Ministry of Health RI, *Unpublished Report of Small Survey*, Jakarta 1986

2. Kosen and Sumantri, *Household Survey 1985*, Jakarta 1994

3. Institute of Research and Development - Ministry of Health RI and Institute of Demographic – University of Indonesia, *Household Survey 1992*, Jakarta 1994

4. Central Bureau of Statistic RI and Ministry of Health RI, *Household Survey 1992*, Jakarta 1995

means that Indonesia is facing a double burden of nutritional problems. In addition, deficiencies of zinc, selenium, folic acid and other micronutrients have recently emerged.⁹

The prevalence of PEM among under-5 children has decreased but severe PEM has increased among children aged 6–23 months. The high prevalence of CED among women of reproductive age will increase the occurrence of low birthweight (LBW).

There has been a sharp reduction in the prevalence of xerophthalmia among under-5 children. However, the economic crisis has effects on symptoms of night-blindness among under-5s and women of reproductive age in urban areas.¹⁰

National IDD mapping in 1996–1998 showed that the total goitre rate (TGR) among school-age children has decreased, although many subdistricts in each province are still considered as pocket areas of endemic iodine deficiency disorders, excluding DKI Jakarta, Riau and Jambi.

The success of the anaemia control programme is reflected in the decrease in anaemia prevalence among pregnant women and under-5 children. However, anaemia among women of reproductive age, particularly adolescent and female workers, is still considered a problem.

Crisis impact on nutritional problems

With regard to the current crisis, maintaining the same progress in the reduction of IMR and U5MR in the future will depend on the ability and capacity of staff at the district level in collaboration with other cross-sectoral areas such as health, agriculture, family planning, religion, education and others, to control PEM among children, CED among women of reproductive age, and infections that are preventable through vaccinations in women and children.

The ongoing economic crisis has a major impact on the life structures of the people. This appears in the number of malnutrition cases, which are aggravated by infectious disease outbreaks such as measles, which can cause death among children.

Nutrition improvement programme

The nutrition improvement programme has been conducted in Indonesia for more than 20 years. It was succeeding in improving the nutritional status of the community but the unexpected economic crisis in the middle of 1997 caused a worsening of the conditions. In an atmosphere of reform, the policies and strategies of Indonesia health development were redesigned under the title of Health Indonesia 2010, wherein a national food and nutrition plan of action (NFPAN) was established in order to provide direction for policy makers and programme managers at the central, province and district levels.

A nutrition improvement programme was initiated to improve the nutritional status of the community, particularly the vulnerable pregnant women, post-partum women and nursing mothers and under-5s. Four programme priorities cover the following: (i) reduction of PEM, CED and obesity; (ii) reduction of VAD; (iii) reduction of IDA and other micronutrient deficiencies; and reduction of IDD.

Policy

The development of the nutrition programme is directed towards improvement of the quality of life, the betterment of family and individual welfare and creation of an awareness of the importance of food in achieving individual and family nutrition awareness (KADARZI).

Objective

The main objective of the nutrition improvement intervention programme is to improve the nutritional status of the community. This consists of four specific directives: (i) minimizing the impact of the crisis on the nutritional status of children and pregnant/lactating mothers; (ii) creating a self-reliance in people as regards better nutritional status and family nutrition awareness; (iii) increasing community food consumption and promoting food diversification for maintaining food safety; and (iv) alleviating the micronutrient deficiency disorders with the aim of producing healthy, intelligent and productive people.

Strategy

The nutrition improvement intervention programme was implemented such that it is (i) managed in line with decentralized systems to improve the capability and responsibility of local government, especially at the district level; (ii) linked with interprogramme and sector coordination, NGO, private sector and community participation; taking into account disparity in epidemiology, geography, demography, social, economic and culture factors; and (iii) is based on research and development, survey, and surveillance, and it will also be monitored and evaluated.

Achievements of the nutrition programme

In Indonesia the prevalence of nutritional problems such as PEM and CED, VAD, anaemia and IDD still constitutes a community health problem, even though there is a declining trend.

Protein energy malnutrition

The nutritional status of under-5s improved over the period 1989–1998. According to data from the National Social and Economic Survey (SUSENAS), nutritional deficiencies among under-5s decreased. Those underfives with W/A Z score < -2 SD dropped from 39.2% in 1989 to 28.3% in 1998. However in the age group of 6–23 months the prevalence of poor nutrition and malnutrition (< -3.0 SD Z W/A) rose prior to and during the crisis.¹³

Chronic energy deficiency

On the basis of Indonesia IDHS 1994, 35.65% of women of child-bearing age (15–49 years old) were suspected to be at risk of CED because the circumference measurement of their left arms was less than 23.5 cm. This figure dropped to 24% on the basis of the Mother and Child Health Survey of 1995.¹⁴ The 1999 National Socio-Economic Survey (Survei Sosial Ekonomi Nasional, SUSENAS) indicated that 24.2% of women of child-bearing age and 27.6% of pregnant

women run the risk of CED. The high level of CED will increase the incidence of low birthweight, which, according to surveys, fluctuates between approximately 8.9 and 22%.

Improving access

Pos Pelayanan Terpadu – Posyandu (integrated health post). The main thrust of the nutrition and immunization programme is the *posyandu*, which is managed by cadres who are members of the community (Fig. 3). The *posyandu* programme covers five basic health service priority programmes: (i) improvement of nutrition; (ii) Mother and Child Health Programme; (iii) family planning; (iv) immunization; and (v) prevention of diarrhoea. *Posyandu* are held once a month. Five tables are set up, four of which are assigned to cadres and the final one of which is assigned to an official of the community health centre (*puskesmas*) or another professional health worker. In 1999 there were 242 000 active *Posyandu* in Indonesia. The quality of the *posyandu* was monitored using the *posyandu* autonomy analysis which divided *posyandu* into the following four stages of development, namely (i) elementary *posyandu*; (ii) middle-level *posyandu*; (iii) full *posyandu*; and (iv) autonomous *Posyandu* (Table 2).¹¹

Puskesmas (health centre). To ensure that health services are within the reach of the community and cover even

isolated areas, the number of community health centres is continually being increased. In 1997 there were 7248 *puskesmas* registered, 1783 of which had facilities for overnight stays and 5465 of which had no such facilities. In 1997 the average number of *puskesmas* was 3.6 per 100 000 people. Apart from the standard *puskesmas*, the government has also built auxiliary and mobile *puskesmas*. According to records there were 8790 *puskesmas* doctors and 1730 nutrition advisors who had completed 1 year of training.

Village midwives. In order to raise the level of health of women and children in rural areas, midwives have been placed in villages. Over the period 1989/1990–1997/1998 there were 53 247 midwives in villages. This means that 98.4% of villages requiring these services had their needs met.¹²

Improving quality

The Directorate of Community Nutrition has conducted several training programmes aimed at raising the capacity level of nutritional cadres in Jakarta and in outlying regions. Recent training programmes have covered the detection and overcoming of poor child nutrition and nutritional counseling at the nutrition corner (*Pozi*) of community health centres. Action taken to increase the coverage of nutrition programmes includes the provision of adequate high-dosage vitamin A capsules, iron supplements in tablet and syrup form and iodine oil capsules.

Micronutrient deficiencies control program

The micronutrient deficiencies control programme in Indonesia is designed nationally, including the nutrition intervention programme, in line with the Indonesia health development programme. Following the fiscal yearly budget, a nutrition programme was routinely proposed that considered monitoring, evaluation and surveillance in the community.

Vitamin A deficiency

On the basis of National Vitamin A Survey data, there has been a drop in the prevalence of xerophthalmia (X-1B) from 1.3% a year in 1978 to 0.33% in 1992. This success led to the Indonesian government's being granted the Spirit of Helen Keller award in 1994. However, on the basis of the

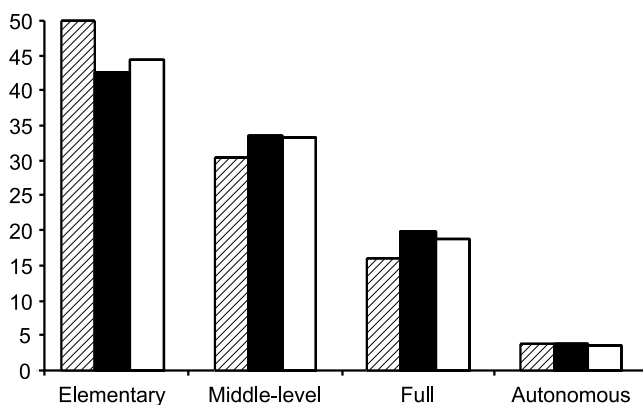


Figure 3. Percentage of *Posyandu* according to stage of development, 1994–1997. (▨), 1994/1995; (■), 1995/1996; (□), 1996/1997. Source: Health Data Centre, Ministry of Health, RI. *Health Profile of Indonesia 1996 – 1998*.

Table 2. Indicator of the development stage of *Posyandu*

No.	Indicators	Elementary	Middle-level	Full	Autonomous
1	Frequency of weighing	< 8			≥ 8
2	Average no. cadres	< 5			≥ 5
3	Average no. cadres	< 50%			< 50%
4	Cumulative FP coverage	< 50%			< 50%
5	Cumulative MCH programme coverage	< 50%			< 50%
6	Cumulative immunization coverage	< 50%			< 50%
7	Additional programmes	(–)			(+)
8	Health fund coverage	< 50%			≥ 50%

Source: Household Health Survey, Ministry of Health, Republic of Indonesia: *Guideline for Assessing the Quality of Posyandu*, Jakarta 1995.

FP, Family planning; MCH, Maternal and child health.

same survey, approximately 50% of under-5s still have a low retinol serum level ($<20 \mu\text{g/dL}$).¹⁵

Nutritional surveillance conducted in four big cities (Jakarta, Semarang, Surabaya and Makasar) showed that the prevalence of night blindness among under-5s and mothers in slum areas was increased (HKI 1998).

The Ministry of Health (MOH) of Indonesia has a national strategy to maintain and prevent the risk of night blindness due to xerophthalmia, and also to keep the serum retinol level high in order to decrease the maternal or infant morbidity and mortality. The consumption of vitamin A-rich food such as dark green leafy vegetables, yellow fruit, eggs and fish is being increased by campaign or promotion, namely 'Social marketing of vitamin A' ('SOMAVITA') and 'Social marketing of natural resources of vitamin A' ('SUVITAL').

High-dose vitamin A. The focus of MOH policies was distribution of vitamin A (100 000 IU; blue); one capsule to babies aged 6–11 months in February or August and the distribution of vitamin A (200 000 IU; red) to children aged 1–5 years twice a year (February and August) in order to maintain a high level of retinal serum (Fig. 4). Furthermore, women in the post-partum stage are given high-dosage vitamin A (200 000 IU; red) within 30 days of giving birth (Fig. 5).²³ Routine distribution of a megadose of vitamin A twice annually (February and August) is carried out through the *posyandu* and *puskesmas*.

Urgent distribution is prioritized as follows.

(1) One capsule of vitamin A is distributed to all under-5s in villages wherein outbreaks of measles have occurred. One capsule of vitamin A is also given to the children who had measles.

(2) For under-5s who had clinical signs of vitamin A deficiency (night blindness, Bigot's spot, exophthalmia, keratitis), and measles with eye complications, an extra three capsules of vitamin A are administered, as follows: day 1, one capsule; day 2, one capsule; month 2, one capsule. (For days 1 and 2, the dose depends on the age of the child.)

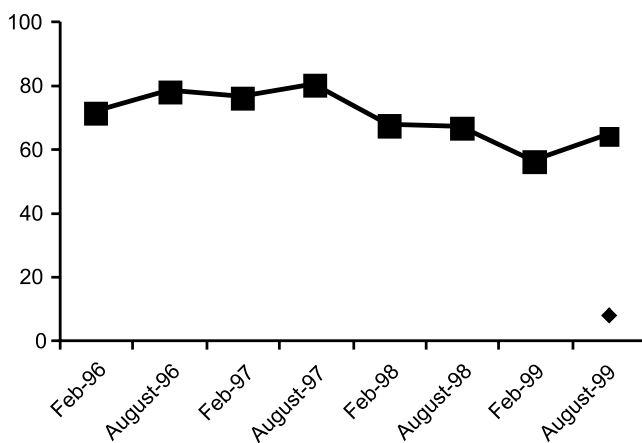


Figure 4. Coverage of vitamin A capsule distribution among under-5's. (◆), 6–11 months; (■), 1–5 years. Source: Source: Central Bureau of Statistics, Republic of Indonesia: *Statistic of Indonesia 1996 – 2000*.

Iron deficiency anaemia

According to 1992 Household Health Survey (Survei Kesehatan Rumah Tangga, SKRT data, 63.5% of pregnant women and 55.5% of under-5s suffer from anaemia (Table 3). Three years later the Household Health Survey (SKRT) data indicated a drop to 50.9% of pregnant women and 40.5% of under-5s. The same survey indicated that 45.1% of women in the post-partum phase, 39.5% of women of child-bearing age and 57.1% of young girls (10–14 years old) suffer from anaemia. (Unpubl. data, National Institute of Health Research and Development, Ministry of Health Republic of Indonesia, 1995.) 1990 data also showed that 30% of female workers suffered from anaemia and that this caused their productivity to drop by 20%.¹⁶ Vitamin A deficiency increases the risk of haemorrhage during child birth and the risk of having a low birthweight baby, and other complications which may lead to death from complicated labour.

Iron tablets. Since 1974, iron tablets have been distributed free of charge to pregnant women through the Family Nutrition Improvement Program (Usaha Perbaikan Gizi Keluarga, UPGK) and the Mother and Child Health Programme. Through the *puskesmas* or the *posyandu*, this programme has provided iron tablets (60 mg of iron and 0.25 mg of folic acid) every day over 90 days during pregnancy and over 42 days during the post-partum period. At the present time, the MOH is capable of providing only 60% of the iron tablet requirements for pregnant women in the various areas. In 1992 the MOH along with the Ministry of Manpower, the National Family Planning Coordinating Board (BKKBN), the State Minister for the Role of Women, the Ministry of Education and Culture and BAPPENAS (The State Development Planning Board), approved a long-term trans-sectoral strategy to combat anaemia up to the year 2000. In 1997 the operational target group for early preventive measures was extended to cover women of child-bearing age, brides-to-be, teenage schoolgirls and female workers.²¹ It was hoped that through training and promotional programmes, these women in these groups would learn to take iron tablets regularly once a week on their own initiative. The productive healthy women workers' programme was developed to increase the

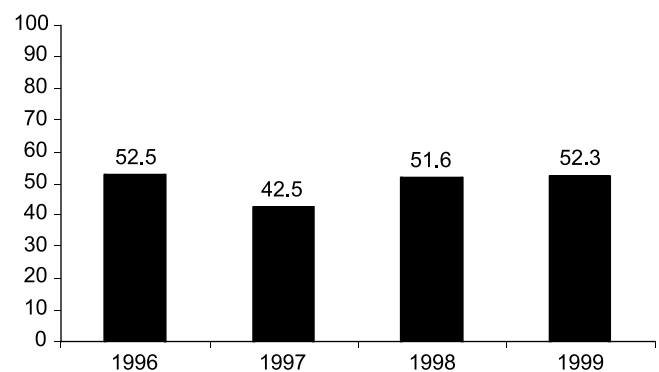


Figure 5. Proportion of post-partum mothers (<30 days) receiving vitamin A capsules. Source: Source: Central Bureau of Statistics, Republic of Indonesia: *Statistic of Indonesia 1996 – 2000*.

participation of business men in combating anaemia among women workers.¹⁶

Iron syrup. The MOH initiated the programme for the distribution of iron in syrup form for babies aged 6–11 months and under-5s, with a special focus on rural areas in eastern Indonesia. The dose for an infant is 15 mg per day over 60 days, and 30 mg per day for a period of 60 days for children aged 12–24 months, or 20 mg/kg of bodyweight. The programme is directed towards meeting infant iron requirements not supplied by food, particularly in areas of under-5s malnutrition and in low-income families (Fig. 6).²²

Iodine deficiency disorders

The provinces that have been identified as susceptible to IDD are West Sumatra, Southeast Sulawesi, Maluku and East Nusa Tenggara. The national map of 1996–1998 showed that approximately 8.8 million people live in areas where IDD is endemic (Table 4). On the national level, the TGR was at 9.8% of schoolchildren in 1998, a drop from the 1990 level of 27.7%. The TGR was still as high as 1% among pregnant women in 1998. The three provinces considered to be acute endemic areas due to the high prevalence of TGR among pregnant women are East Nusa Tenggara, Southeast Sulawesi and Maluku. The national survey of 1999 showed that approximately 63.7% of households use iodized salt, and this increased to 64.5% in 2000.¹⁷ Approximately 18.5% of households are still not using iodized salt (Fig. 7). Iodine deficiency disorders are still a big problem in

334 districts which are serious endemic areas (TGR >30%). Thus the MOH needs community assistance to intensify efforts in overcoming IDD in order to prevent cretinism in newborn babies.

Iodine oil capsules. In 1992 the MOH distributed iodine oil capsules to prevent cretinism and mental retardation in children due to iodine shortage during pregnancy. These iodine oil capsules are distributed to women of child-bearing age including pregnant and nursing women who live in areas where iodine deficiency is endemic (severe and moderate (Table 5)). In areas with a high level of severe IDD, iodine

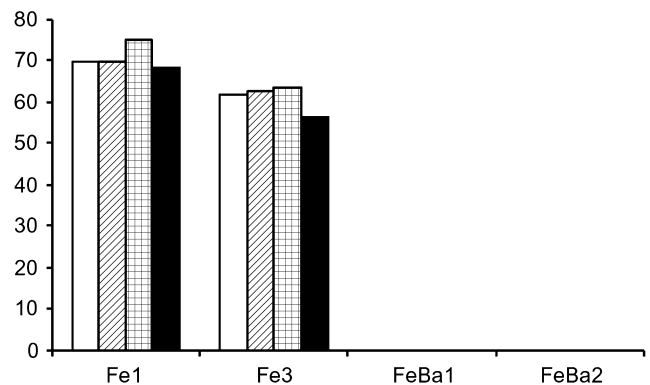


Figure 6. Percentage coverage of distribution of iron tables and iron syrup among pregnant women and under-5's, 1996–1999. (□), 1996; (▨), 1997; (▧), 1998; (■), 1999. Source: Central Bureau of Statistics, Republic of Indonesia: *Statistic of Indonesia 1996 – 2000*.

Table 3. Profile of iron-deficiency anaemia

Vulnerable group	Prevalence (%)		Total
	Male	Female	
Under-5s	33.7	45.2	40.5
School-age children	46.4	48.0	47.2
10–14 years	45.8	57.1	51.5
15–44 years	58.3	39.5	48.9
45–54 years	53.7	39.5	46.5
55–64 years	62.5	40.5	51.5
>65 years	70.0	45.8	57.9
Pregnant women	–	–	50.9
Lactating mother	–	–	45.1

Source: Household health survey, National Institute Research and Development, Ministry of Health RI, 1995.

Table 4. Subdistrict endemic IDD area, in Indonesia 1998

Endemic IDD area	Subdistrict	
	n	%
Severe endemic (TGR <30%, black)	334	8.4
Moderate endemic (TGR: 20.0–29.9%, red)	278	7.0
Mild endemic area (TGR 5–19.9%, yellow)	1167	29.9
Total	1779	45.3

Source: Directorate of Community Nutrition, Ministry of Health RI. *Guideline for iodized oil capsule distribution*, Jakarta 2000. IDD, iodine deficiency disorder; TGR, total goitre rate.

oil capsules are also given to elementary school children (Fig. 8).²⁴

Zinc deficiency and other micronutrient deficiencies

A higher risk of having babies with congenital defects or disabilities has been detected 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 (i.e. post-partum haemorrhage due to atonia uterus) and also the risk of congenital lip and palate deformities. A study in East Nusa Tenggara revealed that an average of 71% pregnant women suffer from zinc serum deficiency (<20 µg/dL), and other studies in Central Java also showed that the prevalence of zinc deficiency among those pregnant women was also high, approximately 70–90%. The risk of bearing a child with spina bifida or anencephaly could be prevented by ensuring adequate folic acid content (400 µg per day) in food. Another study conducted in Bogor also showed that approximately 49% of elementary school children suffered from B6 deficiency both in rural and urban areas. This condition is associated with low school performance.

Research and development of micronutrient deficiencies alleviation programme

The consumption pattern of Indonesian people lacks animal sources, especially among those who live in rural areas. It indicates the possibility of other micronutrient deficiencies affecting the most vulnerable group, but study or survey are recommended to clarify this issue. Considering the magni-

tude of the problem, action is required immediately to solve the problem.

The nutrition improvement programme recently was directed towards helping the poor people, with the target group being women and children, as part of the national social safety net in order to anticipate the impact of the crisis. That is, food supplementation combining micronutrients for malnourished children and undernourished pregnant/lactating mothers.

Multi-micronutrient supplementation for pregnant women, which is still at the pilot stage, will improve the nutritional status of pregnant women and reduce MMR. It includes approximately 15 micronutrient, including iron, low-dose vitamin A, vitamin B complex, vitamin C, iodine and zinc. But the combination of iron and zinc supplementation to children below 2 years, which had been tried in several areas in Indonesia, will be analysed before being adopted in a national programme.

Information system

The implementation of the nutritional programmes is monitored through the *puskesmas* (community health centre) integrated report records (SP2TP) which report the weighing of under-5s, the giving of vitamin A supplements, iron tablets, and iron syrup as well as iodine oil capsules. An evaluation of coverage programme is conducted yearly at an

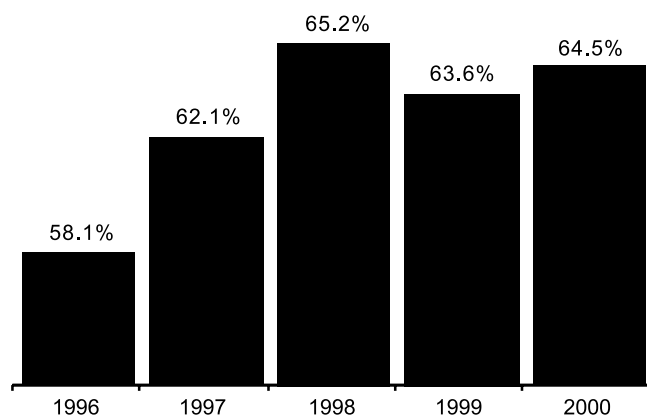


Figure 7. Trend of households consuming sufficient iodized salt (>30 p.p.m. KJ03: Kalium - Iodide). Source: Central Bureau of Statistics, Republic of Indonesia: *Statistic of Indonesia 1996 – 2000*.

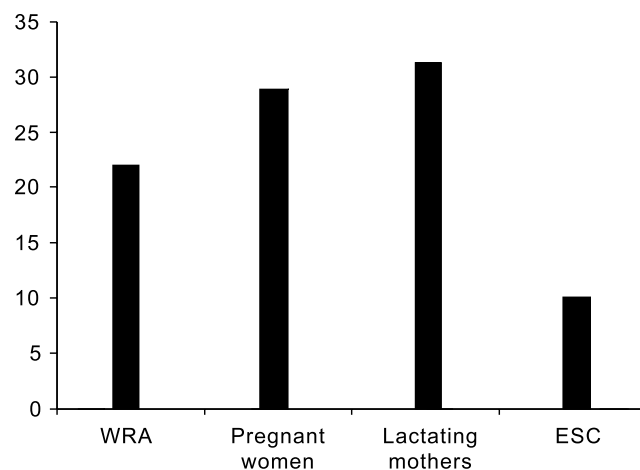


Figure 8. Distribution of iodized oil capsules among women of reproductive age (WRA), pregnant women, lactating mothers and elementary school children (ESC) for the year 1999–2000. Source: Central Bureau of Statistics, Republic of Indonesia: *Statistic of Indonesia 1996 – 2000*.

Table 5. Iodine oil capsules handed out in endemic area

Target	Endemic area	Dose per year
WRA (15–49 years old)	Severe and moderate (TGR > 20%)	2 capsules
Pregnant and postpartum women	Severe & moderate (TGR > 20%)	1 capsule
Primary school children	Severe (TGR > 30%)	1 capsule

WRA, women of reproductive age; TGR, total goitre rate.

One capsule contains 200 mg iodine.

administrative level of the MOH, Provincial and District Health Office. Analysis of data is important as an input for programme re-planning because it helps to make the programme activities more effective and efficient.

The SKDN data are indicators of whether improved facilities and the organization of the Family Nutrition Improvement Programme (UPGK) have resulted in the desired changes in nutritional behaviour and in the coverage of immunization services. These indicators consist of a free variable (the number of under-5s having a Growth Chart For Underfives (Kartu Menuju Sehat, KMS or Towards health cards and K/S or health cards) and three types of free indicators: (i) the level of community participation (D/S); (ii) continuing infant weight checks (D/K); and (iii) programme effectiveness (N/D).

The results of a 1999 analysis indicated that the level of K/S achieved dropped from 77.6% in 1998 to 67.2% in 1999. If one uses a minimal level of 80% then there were still 23 provinces that had not achieved the K/S target. The achievement of D/S was quite stable between 1996 and 1997, but dropped in 1998. The level of target achievement totalled 63.8% in 1996, 65.3% in 1997 and 55% in 1998. The achievement of N/D dropped from 78.1% in 1996 to 68.8% in 1997 and then rose again to 70.9%.¹⁸

Over the crisis period, a surveillance system was revived through a food and nutrition surveillance system a Food and Nutrition Surveillance System (Sistem Kewaspadaan Pangan dan Gizi, SKPG) which monitored reports concerning areas planted with food crops, availability of food, nutritional status (PSG), consumption of nutritional food (SKG) and nutritional crisis reports. Up to the end of February 2000, 23 292 cases of malnutrition had been reported by 270 regencies (86.5%) and 312 cities in Indonesia (Fig. 9).¹⁹

Data recorded are used by managers at the regency level to draw up a geographical information system (GIS). The programme managers at regency levels can find creative solutions to overcome problems more effectively and efficiently in accord with their geographical areas.

Increasing the number of self-reliant, nutrition-conscious families

Developing nutrition instruction and training programmes. The Directorate for the Development of Community Nutrition in Indonesia's MOH has launched 13 basic recommended dietary guidelines (PUGS; Table 6).²⁰ These messages clarify the previous guideline of 'four healthy, five perfect'.

Each of these guidelines is explained further on the basis of age: whether the person is an under-5, child, teenager, worker, woman or senior citizen. On the basis of field surveys five of these 13 basic guidelines can be used as indicators for self-reliant, nutritionally conscious families. These five guidelines are: (i) eat a variety of foods; (ii) use iodized salt; (iii) breast-feed your baby to the age of 4 months; (iv) make a habit of eating breakfast; and (v) monitor growth.

Providing subsidies to poor and low-income families. Subsidies to these families take the form of the health card programme, the poverty alleviation programme and the Social Safety Net–Health Sector (Bidang Kesehatan, BK) programme. As well as this a health insurance programme has been developed at the community level through Community Health Maintenance Insurance as well as through the free distribution of medicinal and micronutritional supplements and free immunization. These subsidies have been

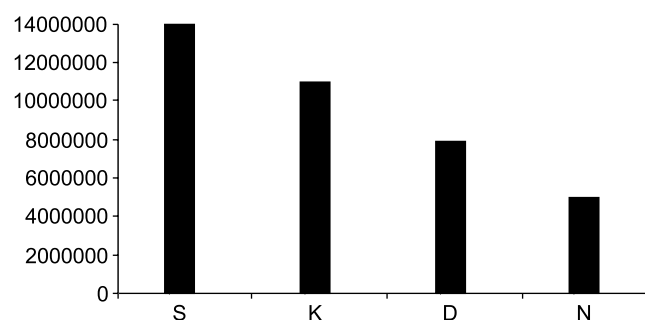


Figure 9. Percentage coverage for monthly weighing in posyandu, 1998–1999. Source: Central Bureau of Statistics, Republic of Indonesia: *Statistic of Indonesia 1996 – 2000*.

Table 6. Thirteen basic recommended dietary guidelines

Eat a wide variety of foods
Consume foods that provide sufficient energy
Obtain approximately half of total energy from foods rich in complex carbohydrates
Obtain not more than one-quarter of the total energy intake from fats or oils
Use only iodized salt
Consume foods rich in iron
Breast-feed your baby exclusively for 4 months
Eat breakfast
Drink adequate quantities of fluids that are free from contaminants
Do adequate exercise
Avoid drinking alcoholic beverages
Consume safety foods
Read the labels on packaged food

increased, particularly since the economic crisis, which resulted in the reappearance of malnutrition (*marasmus* and *kwasiorkor*) throughout Indonesia.

Family Nutrition Improvement Programme

The MOH pioneered the UPGK programme in the 1950s. In 1960 the World Health Organization (WHO) and Food Agricultural Organization (FAO) drew up a concept known as the 'Applied Nutrition Programme' (ANP) which consists of a series of educative activities supported by coordination of related sectors aimed at raising the level of community nutrition in rural areas, the main targets being mothers and children. The classification of the main UPGK activities is as follows: (i) basic UPGK which consists of monitoring growth (weighing of babies and under-5s), training concerning nutrition, nutritional aid packages (iron and vitamin A tablets, iodine and supplementary food) and the use of space around houses; (ii) complete UPGK covering basic UPGK and full health services; (iii) intensive UPGK, which is a combination of basic health, income-generation and the development of research.

Community nutrition education. Since 1995/1996, the MOH has conducted training programmes concerning the 13 basic guidelines for balanced nutrition. The training curriculum was designed to train families, particularly those with under-5s, concerning ways of choosing and preparing food that has variety and is balanced. This programme aims to increase knowledge concerning methods of food preparation, particularly concerning the giving of colostrum, exclusive breast-feeding, the time to start on food other than breast milk, hygienic practices related to the provision and storage of food and dietary patterns of nursing mothers.

Fortification

Iodized salt. The fight against acute iodine deficiency disorders (GAKY) has been supported by Presidential Decree no. 69/1994 concerning the provision of iodized salt. This decree states that 'iodized salt which can be traded for human and animal consumption, the salting of fish and as an auxiliary material for food industries is salt which meets the National Industry Standards (SNI)'. A campaign to raise community awareness took the form of training carried out by the MOH in cooperation with the All-Indonesia Teachers' Association (PGRI), the Ministry of Education and Culture and UNICEF. The main message of this campaign was 'use iodized salt to make your child smarter'.²⁵ The National Salt Commission determined that salt should be fortified with 30–80 p.p.m. of iodine to achieve Universal Salt Iodization in Indonesia with 90% of households using iodized salt. This campaign was directed at achieving the goal of 'iodized salt for everyone' and 'freedom from cretinism in the year 2000'.

Fortification of other foods. The fortification of certain instant noodles with iron, folic acid, vitamin A and other micronutritional elements was another success achieved through cooperation with the private sector. At the present

time the fortification of flour with iron, zinc, B12 and folic acid is being explored. It is hoped that in the future several brands of instant noodles, sugar, flour, fish products and soybean products will be fortified with various vitamins and minerals. As well as this, herbal drinks for women could be enriched with tamarind (which is rich in vitamin C) in order to aid the absorption of iron. This programme would be particularly relevant in areas where consumption of herbal drinks is high.²⁶

Nutritional improvement in institutions

The improvement of nutritional services in schools, factories, reform institutes, prisons, orphanages, old people's homes, Islamic boarding schools, transit centres, motels, training and sports centres is an example of the effort to raise the level of community nutrition.

Schoolchildren's Supplementary Food Programme. This was pioneered in July 1996 and strengthened through Presidential Instruction no. 1 1997, and it aims to increase children's ability to study, to reduce school dropouts, to achieve the 9-year compulsory education programme and to increase nutritional and health awareness. This programme makes available snacks which contain 300 K Calories and 5 g of protein for elementary school children three times a week for 108 school days.²⁷

Iron tablets for female workers. The MOH has recommended that the private sector provide iron tablets for female workers under the supervision of the Ministry of Manpower. Prior to the 1997 crisis, data indicated that between 30% and 40% of women workers were suffering from anaemia, a fact that resulted in a drop of between 10% and 20% in productivity.¹⁶ In view of this problem the Ministry of Manpower was striving to raise the level of health and productivity of women workers in cooperation with P.T. Jamsostek (Workers' Insurance Scheme).

Food and Nutrition Surveillance System

In order to monitor the nutritional state of under-5s at the district and regency levels, a nutrition surveillance system has been set up at *posyandu* as part of the SKPG programme.

The four main SKPG indicators are (i) food production; (ii) food distribution; (iii) changes in dietary patterns; and (iv) nutritional status. One of the aims of SKPG is to determine whether an area is suffering from nutritional problems through the discovery of one or more cases of malnutrition in a village. There are two criteria for determining malnutrition, namely (i) anthropometry, where the weight is below 60% of WHO's Normal Child Health Standard; and (ii) clinically, classified as *marasmus* and *kwasiorkor*.

On the regional and town levels, a food and nutrition crisis map is to be drawn up at least once a year. The indicators used in the making of this map are the prevalence of PEM (Protein-Energy Deficiency; Kurang Energi Protein, KEP) in under-5s, the extent of damage to agricultural areas and the prevalence of poor families. This map is also used for programme planning and evaluation.

Health paradigm and decentralization

Entering the 21st century the Indonesian government has launched the Health Awareness Development Movement as a national development strategy aimed at achieving Healthy Indonesia 2010, a programme launched by the President of Indonesia in Jakarta on 1 March 1999. With these new policies and strategies, development planning and implementation in all sectors have to take into consideration both negative and positive impacts of development on the health of the individual, the family and the community. In the health sector there has to be a greater orientation towards preventive measures without ignoring curative and rehabilitative measures. The basis of this new outlook in health development is referred to as the health paradigm.

An integral part of this new concept is the idea that members of the community should also be responsible for living a healthy life, adopting healthy behaviour patterns and striving to avoid infection from communicable diseases so that they can be productive and make a maximum contribution to national development.

Efforts to raise the quality of community nutrition and to prevent nutritional problems are extremely important within the strategy of mankind-centred national development programmes. Improved nutrition is thus the main thrust of the Health Paradigm Programme, aimed at achieving Healthy Indonesia in 2010. While there is still a focus on efforts to increase the nutritional status of babies, programmes aimed at preventing an increase in the mortality rate of babies and under-5s must continue to be promoted. The considerations underlying the decision to develop a nutritional programme as the main thrust of the health paradigm are as follows.

(1) Nutrition influences the quality of human resources and on the macro level influences the human development index of a country.

(2) Nutrition is a matter of community health, the solution to which demands a comprehensive approach.

(3) Nutrition levels are indicators of food shortages at the household level. Therefore an increase in the level of nutrition demands policies that guarantee the right of each member of the community to obtain adequate food of a sufficiently high quality in accord with their individual needs.

(4) Nutritional problems can be caused by a low level of awareness concerning nutrition and can be exacerbated by diseases resulting from poor personal hygiene or poor environmental sanitation. A high immunization coverage has a big impact on the prevention of nutritional problems.

(5) Hidden hunger requires the overcoming of micronutritional problems such as iron, vitamin A, iodine, zinc and selenium deficiencies, particularly among the vulnerable groups (children and women).

It is necessary for management of health programmes in the future to improve their performance in order to achieve success in various areas such as efficiency, quality, sustainability and equitable coverage. With the approach of the era of decentralization changes will take place in the roles of the various sectors at the various levels of government. Thus

regional governments need to play a more dominant role in the provision of services, as regional autonomy is extended. Increased regional authority demands several basic changes, including changes in the attitudes and behaviour of those involved in health services.

Roles of the central government that are to be transferred to regions include: (i) integrated planning and financing of health services; (ii) human resources development at the district level; (iii) health services at the district level financed by block grants; and (iv) increased community participation in health services and a more dominant role of the province and the regency in planning and monitoring.

Future direction of the nutrition programme

As well as being directed towards pregnant women and under-5s, the nutrition programme is also directed at women of child-bearing age (15–49), a long time prior to pregnancy, to young girls in schools and brides-to-be and women workers who need to be protected from nutritional deficiency or anaemia so that the risk of maternal death can be indirectly reduced.

Policies in the nutrition improvement programme support the vision of 'Healthy Indonesia in the year 2010' in order to raise the level of intelligence and productivity of human resources. The specific goals of the nutrition programme are (i) increasing community self-reliance in attempts to raise the level of nutrition and to develop nutrition-conscious families (*Kadarzi*); (ii) increasing the number of people eating nutritionally balanced diets by monitoring the drop in the number of people suffering from malnutrition and over-nutrition; and (iii) increasing the variety of food consumed in order to support Indonesia's programme for self-reliance in food.

The priority target group of the nutrition programme is vulnerable groups and women at productive ages, such as babies, under-5s, school-age children, teenagers, pregnant women and nursing mothers; and productive groups such as female workers, athletes and senior citizens.

Strategies to improve nutrition are directed at overcoming malnutrition (PEM, anaemia, VAD, acute IDD and deficiencies of other micronutrients such as zinc and selenium), over-nutrition and the consumption of a variety of foods specific to the different regions of Indonesia. Efforts to increase decentralization in nutrition improvement programmes need to take into account the regency's and the town's ability to manage nutrition improvement programmes, particularly the designing of programmes to overcome nutrition problems. The approach that has been adopted is the implementation of more appropriate and more widespread information and education communication programmes, and the supplementation and fortification or enrichment of food. These strategies have been implemented through overall and integrated intersectoral cooperation, involving families, community-initiated programmes and the private sector.

The four main strategies for overcoming food and nutrition problems are: (i) community empowerment through the

revitalization of *posyandu* (integrated health services centres); (ii) the empowerment of families through revitalization of the UP GK or the Family Nutrition Improvement Programme; (iii) the improvement of intersectoral cooperation through the revitalization of SKPG or the Food and Nutrition Surveillance System; and (iv) the improvement of the quality of service for cases of malnutrition in hospitals, *puskesmas*, *posyandu*, families etc.

Attempts to improve nutrition need to be supported by the application of appropriate technology, based on research. Priority should also be given to attempts to collate data concerning groups within the community who have a high risk of degenerative disease as a result of over-nutrition and also the senior citizen category, which is tending to increase.

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