The Rapid Assessment of Student Health and Nutrition in Indonesia

The Education Sector Analytical And Capacity Development Partnership (ACDP)

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Table of Contents

List of Figures

List of Tables

Acronyms and Abbreviations

ARI	:	Acute Respiratory Infection
Bappenas	:	*Badan Perencanaan Pembangungan Nasional*
BCG	:	Bacillus Calmette–Guérin
BKB	:	*Bina Keluarga Balita*
BP		Blood pressure
BPS	:	*Badan Pusat Statistik*
CBS		Central Bureau of Statistics
CHO	:	Carbohydrate
DPT	:	Dipththeria, Pertussis, Tetanus
ECED	:	Early Childhood Education and Development
HB	:	Hepatitis B
HD		Heart Disease
HFA	:	Height for Age
KB	:	*Kelompok Bermain*
LBW	:	Low Birth Weight
Balitbangkes	:	*Badan Penelitian dan Pengembangan Kesehatan*
MOH	:	Ministry of Health
NTT	:	*Nusa Tenggara Timur*
PAUD	:	*Pendidikan anak usia dini*
Polindes	:	*Pondok Bersalin Desa*
Poskesdes	:	*Pos Kesehatan Desa*
Puskesmas	:	*Pusat Kesehatan Masyarakat*
Pustu	:	*Puskesmas Pembantu*
RDA	:	Recommended Daily Allowance
Riskesdas	:	*Riset Kesehatan Dasar*
Susenas	:	*Survei Sosial Ekonomi Nasional*
TK/BA/RA	:	*Taman Kanak-kanak/Bustanul Athfal/Raudhatul Athfal*
TPA	:	*Tempat Penitipan Anak*
UKS	:	*Usaha Kesehatan Sekolah*
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UNICEF	:	United Nations Children's Fund
WFA	:	Weight for Age
WFH	:	Weight for Height
WHO	:	World Health Organization

Executive Summary

The rapid assessment of student health and nutrition provides an overview of the current situation of Indonesian children under the age of 19 years. The number of Indonesian children age 0-19 years in 2014 totals about 91.6 million. Of this total 24 million are age 0-4 years, 23.1 million age 5-9 years, 22.4 million age 10-14 years, and 22.0 million age 15-19 years. The analyses presented in this report are based on data from *Riskesdas* 2007, 2010, and 2013, the Population Census 2010, and also *Susenas* 2012.

On average, 38.5 percent of children aged 0-6 years are sick for 3.9 days each month. Among school age children 7 to 18 years, the proportion of those who are sick starts with 28 percent for those of 7 years of age and declines to 17 percent for those who are 18 years of age. The most common of diseases affecting Indonesian children are diarrhea, acute respiratory infection, pneumonia, coughing, and pulmonary tuberculosis.

The next concern for Indonesian children is the high incidence of malnutrition, starting with malnourishment among infants. The prevalence of low birth weight babies varies across provinces from the lowest rate of 7.2 percent to the highest rate of 16.9 percent. Some 76 percent of Indonesian babies are born with normal birth length of 48 to 52 cm; however 20.2 percent are born below the standard (<48 cm). Nationally 4.3 percent babies are born with a combination of small weight (<2500 grams) and stunting (<48 cm).

The problem of malnutrition continues to the next ages, in 2013 only 36.8 percent of children under 5 were considered normal in physical development. According to *Riskesdas* 2013, the highest prevalence of types of malnutrition was stunting which amounted to 37.2 percent while 19.6 percent were classified as underweight, 12.1 percent wasting, and 11.9 percent overweight.

Data from *Riskesdas* 2013 indicates that many Indonesian children chronically fail to grow normally starting from birth until they reach the age of 18 years. The mean height differences of Indonesian children compared to the 2007 WHO standards were 12.5 cm for boys and 9.8 cm for girls by the time they reach the age of 18 years. Stunting reflects chronic malnutrition among children and could be related to poverty as large differences between the poorest and richest quintiles in terms of the magnitude of stunting are found. Among the poorest the prevalence of stunting is almost two times higher than among the richest.

The direct cause of malnutrition is associated with both unbalanced and insufficient food intake. In addition, infection and malnutrition have been always associated with malnutrition, and the high incidence of stunting in Indonesia could be because of hunger combined with infectious diseases. This situtation is worsened when immunization does not cover all children while growth monitoring is not always carried out.

With all the problems facing Indonesian children, school health and nutrition initiatives become very important investments that can be implemented through the *Usaha Kesehatan Sekolah (UKS*). Bettering health and nutrition among school-age children is a strategic element in efforts to develop the community as a whole. The benefit from improving health and nutrition at s chool age will solve the intergenerational issue for the future.

1. Introduction

The rapid assessment of student health and nutrition provides an overview of the current situation of Indonesian children under the age of 19. The analyses presented in this report are based on existing data which have been used to identify factors which impact on child development. This analysis is a pre-requisite for further progress on the sectors involved in the Indonesian development agenda during the post MDGs period.

Progress in achieving future development goals depends on progress in improving the health and nutrition of Indonesian children. The current problem of stunting among Indonesian children is critical and requires serious attention otherwise the risk of morbidity and mortality as well as other consequences for child development will not be resolved.

WHO estimates that malnutrition directly and indirectly contributes to up to 45 percent of all child deaths, making children more vulnerable to severe diseases (WHO, 2013). In addition to contributing to child morbidity and mortality, stunting also carries significant adverse consequences for income poverty. Several studies have estimated that a one percent reduction in stunting is associated with a 1.4 percent increase in wages (World Bank, 2006). Moreover, malnutrition is also affecting development in terms of education and productivity. Stunted children usually are also anaemic which inhibits cognitive development, undermining school performance and long-term human productivity.

The objective of this rapid assessment is to advocate for greater attention to be committed by policy makers and involved sectors to address these serious health and nutrition issues of Indonesian children. This article provides an analysis of the magnitude and causes of child health and nutrition problems as well as recommendations for future interventions.

The analyses use existing data sourced from *Riskesdas* 2007, 2010 and 2013, Population Census 2010, and *Susenas* 2012.

2. Geographic and Demographic Background

Indonesia is the largest archipelagic nation in the world, consisting of approximately 17,500 islands. There are five major islands: Sumatra, Java, Kalimantan, Sulawesi and Papua and also two larger groups of islands which are Nusa Tenggara and the Moluccas. **Table 1** shows the geography of the seven major regions in Indonesia. Administratively up to December 2012, Indonesia consisted of 34 provinces, 410 districts, and 98 municipalities. About 80 percent of Indonesia's territory is covered with water and the total land area is 1,910,716 square kilometers (Wikipedia, 2014).

Table 1. Geography of Indonesia by Region, 2012

Region	Number of		Area (Square Km)			%
	Districts	Municipalities	Min	Max	Sum	
Sumatera	119	34	23	18,359	480,732	25.2
Jawa	85	34	10	5,782	129,383	6.8
Kalimantan	47	9	72	42,620	544,130	28.5
Sulawesi	65	11	68	13,041	188,487	9.9
Papua	40	2	537	44,071	416,047	21.8
Nusa Tenggara	37	4	26	7,000	73,051	3.8
Maluku	17	4	111	8,152	78,886	4.1
Indonesia	**410**	**98**	**10**	**44,071**	**1,910,716**	**100.0**

Based on the 2010 census conducted by the Central Bureau of Statistics (CBS), the Indonesian population was estimated to be 238.518 million people, making Indonesia the world's fourth most populous country. Based on population projections, the total population will reach 305.652 million in 2035. Around 57 per cent of the population live on the island of Java, which is only 6.8 per cent of the country's total land area (*BPS*, 2013).

The number of children 0-19 years of age was almost 90 million in 2010, and this number is projected to decline to 89 million by 2035. **Table 2** presents the trend for boys and girls by age groups from the year 2000 and the projections to the year 2035 (*BPS*, 2005; *BPS* 2013). Population distribution by age group, gender, and province in 2014 is presented in **Appendix - Table A1**.

For the purpose of assessing trends in the condition of pre-school children, it is important to know the distribution by age groups in months as can be seen in **Table 3**. The trends presented are based on data from the Population Census 2010, and Susenas 2012.

Table 2. Numbers of children 0-19 years by age groups and gender: 2000-2035

Age groups	2000	2005	2010	2015	2020	2025	2030	2035
Boys	42,660.50	42,251.80	45,825.00	47,044.00	47,595.90	47,596.40	46,772.00	45,390.80
0-4	10,153.40	10,364.40	12,048.70	12,273.40	11,980.20	11,594.60	11,196.90	10,868.70
5-9	11,117.10	10,082.30	11,542.20	11,974.40	12,208.00	11,922.60	11,542.60	11,148.70
10-14	10,780.60	11,077.80	11,333.60	11,507.20	11,942.30	12,177.90	11,894.90	11,516.80
15-19	10,609.40	10,727.30	10,900.50	11,289.00	11,465.40	11,901.30	12,137.60	11,856.60
Girls	41,485.80	40,794.30	43,871.10	44,908.80	45,510.30	45,615.00	44,954.90	43,588.80
0-4	9,798.60	9,985.10	11,405.70	11,792.10	11,495.60	11,116.40	10,729.20	10,411.10
5-9	10,749.30	9,747.80	10,975.80	11,356.00	11,747.60	11,455.90	11,080.30	10,695.80
10-14	10,370.00	10,724.00	10,832.00	10,954.30	11,336.30	11,729.10	11,438.90	11,064.50
15-19	10,567.90	10,337.40	10,657.60	10,806.40	10,930.80	11,313.60	11,706.50	11,417.40

Table 3. Numbers of pre-school children 0-6 years, 2010-2012

Age (in months)	*SP* 2010		*Susenas* 2012	
	Boys	Girls	Boys	Girls
0-11	2,242,180	2,118,580	2,192,636	2,110,378
12-23	2,275,080	2,154,980	2,261,339	2,095,526
24-35	2,334,400	2,199,790	2,460,660	2,365,116
36-47	2,368,230	2,244,270	2,554,596	2,362,844
48-59	2,364,920	2,228,740	2,535,846	2,455,395
60-71	2,305,970	2,167,720	2,489,186	2,357,494
72-83	2,378,940	2,223,970	2,429,892	2,238,949
Total	**16,269,720**	**15,338,050**	**16,924,155**	**15,985,702**
Boys + Girls	**31,607,770**		**32,909,857**	

3. The Child Rights and Education Profile

3.1 Birth Certificates

Birth registration is an important measure for child protection. In Indonesia, a birth certificate is the first certificatory identification made in regards to the child's civil and legal status. Every parent is required to register and to certify birth of their babies to the authorized Indonesian civil institution within the first sixty days of the birth of their child. Birth certificates help the government to track the country's demographic statistics, health trends and differentials. Birth certificates also support the availability of information for more accurate planning and implementation of development policies and programs, particularly in the fields of health, education, and employment. (UNICEF, 2014)

In Indonesia, birth registration is not sufficiently prioritized by the government. From the *Susenas* 2012 (see **Table 4**), only approximately 50 percent boys and girls age 0-6 years have birth certificates, and about 17 percent report they have but are unable to show it. (The proportions of children 0-6 years with birth certificates by gender and province is presented in **Appendix - Table A2**).

Table 4. Proportion of children 0-6 years with birth certificate information by gender, *Susenas* 2012

Age (in months)	Boys				Girls			
	Yes, able to show it	Yes, unable to show it	Don't have	Don't know	Yes, able to show it	Yes, unable to show it	Don't have	Don't know
0-11	38.1	14.1	47.3	0.6	39.0	13.9	46.4	0.7
12-23	50.1	15.8	33.7	0.4	48.6	15.8	35.1	0.6
24-35	48.9	17.8	32.6	0.7	51.1	16.5	31.7	0.6
36-47	51.8	16.6	31.1	0.5	52.0	17.5	29.8	0.7
48-59	53.0	17.9	28.5	0.5	52.1	17.6	29.7	0.6
60-71	54.4	18.0	27.0	0.6	54.5	18.0	27.0	0.6
72-83	55.0	18.7	25.8	0.5	55.3	18.4	25.9	0.4
Total	**50.4**	**17.1**	**32.0**	**0.5**	**50.5**	**16.9**	**32.0**	**0.6**

3.2 Education Profile

Indonesia has implemented the early childhood education and development (ECED) policy since 2007, when it was officially recognized that childhood stimulation is a key to brain development. The process of brain development starts when the child is born, even the stimulation should start from very early during pregnancy. ECED becomes very essential for future education in terms of building the child's capacity for better child development outcomes. (*Bappenas*, 2006).

According to *Susenas* 2012, Indonesian children who are enrolled in an ECED program amounted to only 15.7 percent of boys and 16.5 percent for girls (**Table 5**), plus 7.3 percent for boys and 7.9 percent for girls who were previously enrolled, but are no longer enrolled. The highest proportion is among children at the ages of 4 and 5 years both for boys and girls. The provincial distribution of Indonesian children who are enrolled in an ECED program can be seen in **Table A3**. The places

that are used for ECED for children 0 to 6 years are Playgroups (*KB*), Day Care (*TPA*), official kindergarten (*TK/BA/RA*), Integrated *Pos PAUD* with *BKB* and/or *Posyandu*, Private *Pos PAUD* (**Table 6**). From *Susenas*, the quality of services cannot be evaluated, such as: (i) the setting of child development in Indonesia, (ii) how is an Indonesian child able to do and by what age, (iii) how many children enrolled in these services have better development outcomes (cognitive indicators).

Table 5. Proportion of children attending ECED programs by age groups and gender, *Susenas* 2012

Age (in months)	Boys			Girls		
	Yes, not anymore	Yes, currently enrolled	No	Yes, not anymore	Yes, currently enrolled	No
0-11	0.2	0.2	99.6	0.3	0.2	99.5
12-23	0.3	0.7	99.0	0.3	0.5	99.2
24-35	0.7	1.9	97.4	0.7	2.6	96.7
36-47	2.1	9.0	88.8	2.6	10.4	87.0
48-59	5.3	24.8	69.9	5.4	27.6	67.0
60-71	11.0	44.7	44.3	12.2	46.4	41.4
72-83	30.8	25.1	44.1	33.4	24.3	42.3
Total	**7.3**	**15.7**	**77.0**	**7.9**	**16.5**	**75.6**

Table 6. Type of pre-school attended by age groups and gender, *Susenas* 2012

Age (in months)	Boys					Girls				
	TK/BA/RA	Play Group (KB)	TPA	Pos PAUD*)	Other Type of PAUD**)	TK/BA/RA	Play Group (KB)	TPA	Pos PAUD*)	Other Type of PAUD**)
0-11	0.0	0.0	7.3	0.4	0.3	0.0	0.0	14.0	0.3	0.5
12-23	0.0	10.5	8.3	0.9	0.9	0.0	4.9	7.5	0.7	0.8
24-35	0.0	11.6	10.6	4.9	4.6	0.0	18.1	20.9	6.4	3.5
36-47	1.6	34.6	10.0	21.3	19.3	2.0	30.1	9.8	21.6	19.5
48-59	13.7	43.3	15.0	36.4	32.1	14.5	46.9	12.5	35.7	33.8
60-71	41.5	0.0	25.9	20.9	26.0	41.9	0.0	21.6	22.6	23.4
72-83	43.2	0.0	22.8	15.3	16.8	41.6	0.0	13.7	12.7	18.5

*) Integrated *PAUD* with *BKB* and *Posyandu*
**) Private *PAUD*

There is an overlap in the data from *Susenas* 2012 on children aged 5 and 6 years attending school. **Table 7** presents the proportions of school participation by age and gender. By the age of 18 years, only 0.9 percent of boys and girls have never attended school; while 60.5 percent of boys and 62 percent of girls no longer attend school. The drop out generally starts at age 12, both for boys and girls and increases as age increases.

Table 7. Proportion of School participation by age and gender, *Susenas* 2012

Age (in years)	Boys			Girls		
	Never/have not attended school	Currently attended school	Not attending school anymore	Never/have not attended school	Currently attended school	Not attending school anymore
5	95.9	4.1	0.0	94.5	5.5	0.0
6	51.5	48.5	0.0	48.1	51.9	0.0
7	4.4	95.3	0.3	3.4	96.4	0.1
8	1.1	98.7	0.2	1.0	98.8	0.2
9	1.0	98.7	0.3	0.7	99.0	0.3
10	0.8	98.8	0.4	0.8	98.9	0.3
11	0.6	98.4	1.0	0.6	98.7	0.7
12	0.6	96.8	2.6	0.7	97.2	2.2
13	0.8	94.2	5.1	0.8	95.6	3.6
14	0.8	89.2	10.1	0.7	92.0	7.3
15	0.8	82.2	17.0	0.8	84.5	14.6
16	0.7	78.0	21.3	0.6	80.7	18.7
17	0.9	63.2	35.9	0.9	63.3	35.8
18	0.9	38.6	60.5	0.9	37.0	62.0

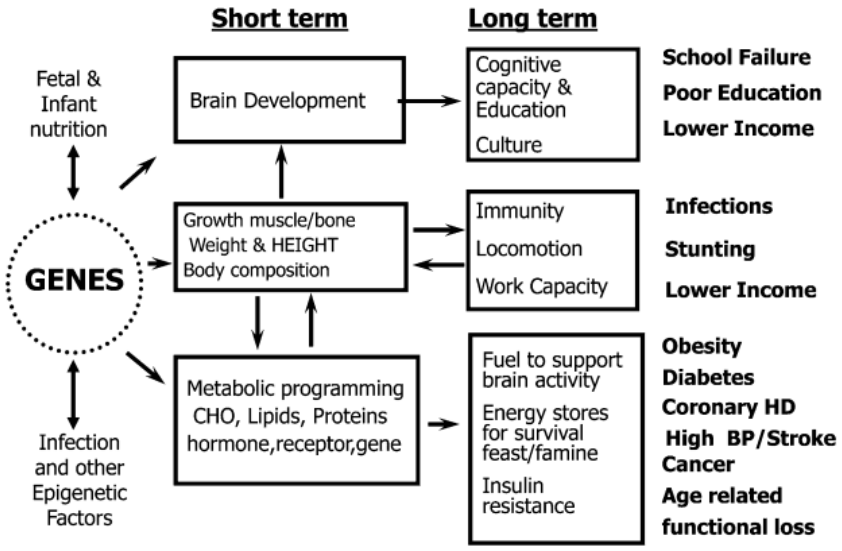
In Indonesia, based on assessment by UNESCO, the youth literacy rate (15—24 years of age) has increased from 96.2 percent in 1990 to 99.5 percent in 2010. By gender, the male literacy rate was a little higher than female. For males the rate has increased from 97.4 percent in 1990 to 99.6 percent in 2010; and for females the rate has increased from 95.1 percent in 1990 to 99.4 percent in 2010 (UNESCO, 2012).

4. Conceptual Framework

Optimum fetal and child growth and development is influenced by several factors related to behavior, diet, and health. The importance of nutrition during pregnancy and early infancy in defining short-term health and survival has been well known. Barker's hypothesis provides evidence that early nutrition has significant effects on later health and well-being. (Barker, 1998). Barker's hypothesis provides that…*'The fetal origins of adult disease (FOAD) hypothesis is risk factors from intrauterine environmental exposures affect the fetus's development during sensitive periods, and increases the risk of specific diseases in adult life….'*

Figure 1 shows the short term and long term consequences of nutrition-gene-environment conditions in early life on relevant health and disease outcomes. In the short term, malnutrition has significant health consequences, increasing both mortality and morbidity, particularly due to infectious diseases such as diarrhea, measles, pneumonia, and malaria. In the long term, malnutrition has been associated with lower school performance, poorer attention in class, greater grade repetition, higher drop out of school, and lower graduation rates. Long-term consequences of malnutrition have been documented in terms of non-communicable diseases, such as obesity, diabetes, coronary heart disease, etc., lower earnings and family income, which affect men and women.

Figure 1. Short and long term consequences of nutrition-gene-environment conditions in early life on relevant health and disease outcomes



Source: Ricardo Uauy, et.al, 2011

This paradigm is true for Indonesia where all evidence demonstrates the double burden of nutrition related diseases, such as acute malnutrition coexisting with obesity and other chronic diseases (hypertension, diabetes, cancer, etc.).

Based on the above conceptual framework, the following analyses are presenting the profile of Indonesian children in terms of their health and nutrition situation.

5. School Aged Children Health and Nutrition

Indonesian children are very vulnerable, they are unhealthy and malnourished. *Susenas* 2012 provides information about whether in the last month complaints about fever, coughing, runny nose, asthma, diarrhea, recurrent headache, toothache, or others have affected daily life. The analysis puts those complaints together and labels them as 'sick' and also counts the average days affected per month. The results are presented in **Table 8** for pre-school aged children 0-6 years, and **Table 9** for school aged children 7-18 years of age.

Table 8. Proportion of pre-school children sick last month and average days of affected by age groups and gender, Susenas 2012

Age (in months)	Health complaints last month			Average days sick
	Boys	Girls	Boys + girls	
0-11	38.5	35.7	37.1	4.2
12-23	49.0	49.6	49.3	4.1
24-35	43.9	44.0	44.0	4.0
36-47	39.3	38.8	39.0	3.8
48-59	37.1	36.4	36.8	3.8
60-71	33.5	33.2	33.4	3.8
72-83	30.8	30.6	30.7	3.6
Total	**38.7**	**38.2**	**38.5**	**3.9**

On average, 38.5 percent of children 0-6 years old are sick for 3.9 days each month. Almost one half of children aged 12 to 23 months are sick for 4.2 days each month. The proportion of health complaints and the average days during which they are affected are decreased for older children. There is no significance difference by gender.

For school aged children, the proportion of health complaints are less compared with pre-school aged children, starting with 28 percent for aged 7 years to 17 percent for aged 18 years. However, the average days affected is longer for older children as compared to younger ones, 4.53 days per month for aged 18 and 3.57 days per month among the of 7 years of age.

Table 9. Proportion of school aged children sick last month and average days of affected by age and gender, *Susenas* 2012

Age (in years)	Health complaints last month			Average days sick
	Boys	Girls	Boys + girls	
7	27.7	28.2	28.0	3.57
8	25.2	24.9	25.0	3.61
9	23.9	24.2	24.1	3.70
10	23.3	22.4	22.9	3.77
11	20.8	20.9	20.9	3.61
12	18.9	19.0	19.0	3.81
13	18.3	18.7	18.5	4.01
14	17.2	18.0	17.6	3.75
15	16.2	17.7	17.0	4.23
16	16.9	17.9	17.4	3.98
17	15.1	18.0	16.5	4.07
18	15.1	19.1	17.1	4.53

The trend in the health condition of children aged 0-18 years can be evaluated using data from *Riskesdas* 2007, and 2013. The analysis is limited to the common communicable diseases, such as diarrhea, acute respiratory infection (ARI), pneumonia, coughing, and pulmonary tuberculosis. The question about health condition in *Riskesdas* was asked by surveyors who are health staff, including nurses, midwifes, or nutritionists. To classify the proportion of diseases, respondents were asked whether they are suffering for certain disease during the past one month or past two weeks or the past year identified by health personnel (MOH 2008, 2010, 2013).

Diarrhea prevalence was determined by asking whether respondents have been diagnosed to have diarrhea by health personnel in the past one month. **Figure 2** presents the trend for diarrhea from 2007 and 2013 for children 0 to 18 years by gender. The proportion of diarrhea was lower in 2013 as compared to 2007. The proportion reporting diarrhea for children 0-18 years varies with age, starting with a higher proportion for younger children and declining for older children, there are not significantly differences between boys and girls. In general, the incidence of diarrhea is slightly higher for children living in rural than urban areas (**Figure 3**).

Figure 2. Proportion of children 0-18 years having diarrhea last month gender, *Riskesdas* 2007 and 2013

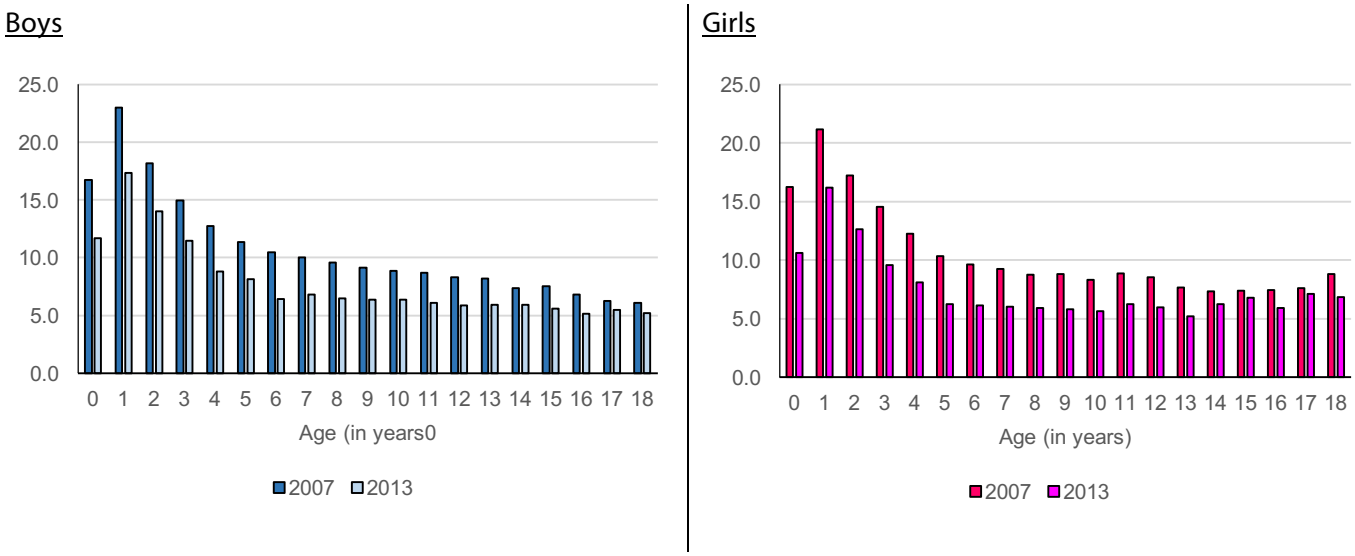


Figure 3. Proportion of children 0-18 years having diarrhea last month by residence, Riskesdas 2013

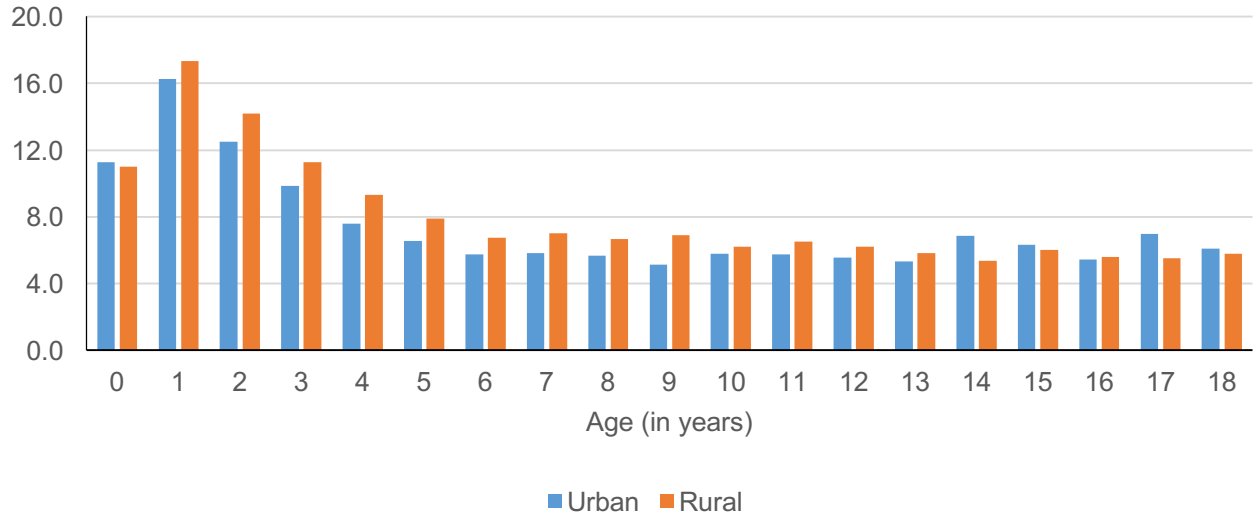
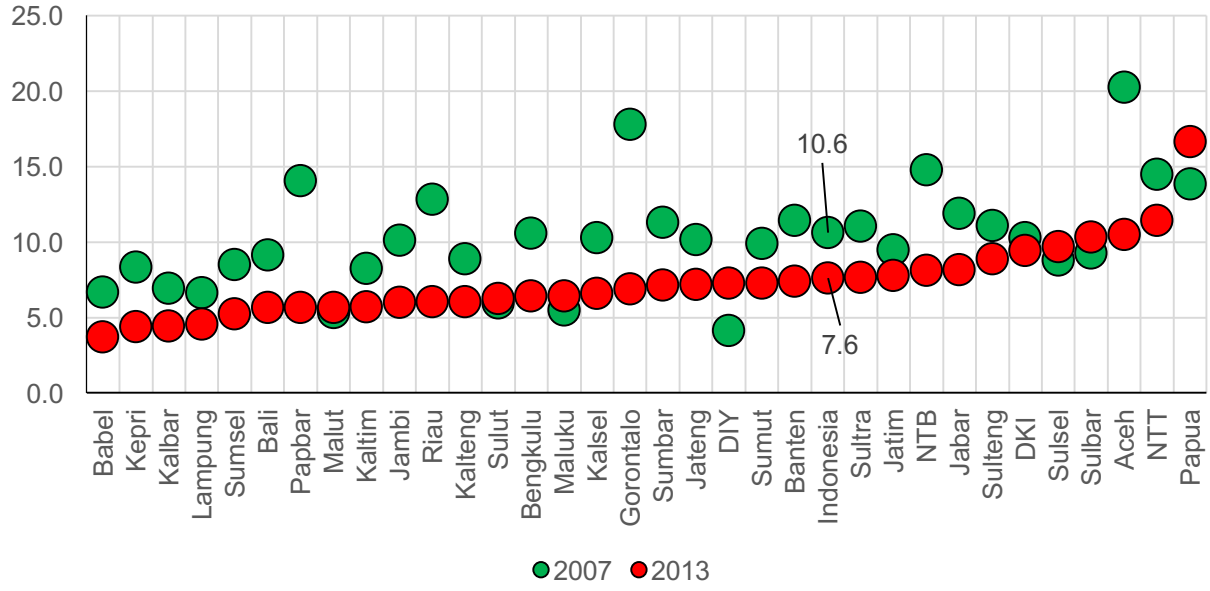


Figure 4 and **Figure 5** present the proportion of diarrhea by wealth quintiles and also by provinces. The occurrence of diarrhea is 1.7 times greater for children who are in lowest quintile compared to children in highest quintile (10.4 percent and 6.1 percent, respectively). For some age groups, such as for ages 5, 7, 8, 9, 10, 11, and 13 years, the occurrence of diarrhea is more than 2 times for children who are in lowest quintile as compared to those in the highest quintile.

Figure 4. Proportion of children 0-18 years having diarrhea last month by wealth quintiles, *Riskesdas* 2013

Figure 5. Proportion of children 0-18 years having diarrhea last month by province, *Riskesdas* 2007 and 2013



By province, the occurrence of diarrhea among children 0-18 years declined from 2007 to 2013 (10.6% to 7.6% respectively). There are some provinces, such as DI Yogyakarta, Maluku Utara, Sulawesi Utara, Sulawesi Selatan, and Sulawesi Barat, where the incidence of diarrhea is increasing, while in two provinces the incidences have declined very significantly (Gorontalo and Aceh).

The second common communicable disease for children is acute respiratory infections (ARIs). *Riskesdas* has not classified ARIs into upper or lower tract infections. Respondents were asked whether they have ever been diagnosed by health personnel to have ARIs in the last one month. **Figure 6, 7, 8** and **9** present the prevalence of ARIs among children 0-18 years old by gender, residence, wealth quintiles, and provinces.

Figure 6 presents the trend for ARIs from 2007 and 2013 for children 0 to 18 years of age by gender. In general, the proportion of children having ARIs had similar levels both in 2007 and in 2013 (declining slightly from 30.5% in 2007 to 29.9% in 2013). The proportion reporting ARIs for children 0-18 years of age varies with age, starting with a higher proportion for younger children and declining for older one, the proportions are slightly higher among girls. The highest prevalence occurred among children aged one year old (almost 45%). And the prevalence of ARIs is similar for both children whether they live in rural or urban areas (**Figure 7**).

Figure 6. Proportion of children 0-18 years having ARI last month by gender, *Riskesdas* 2007 and 2013

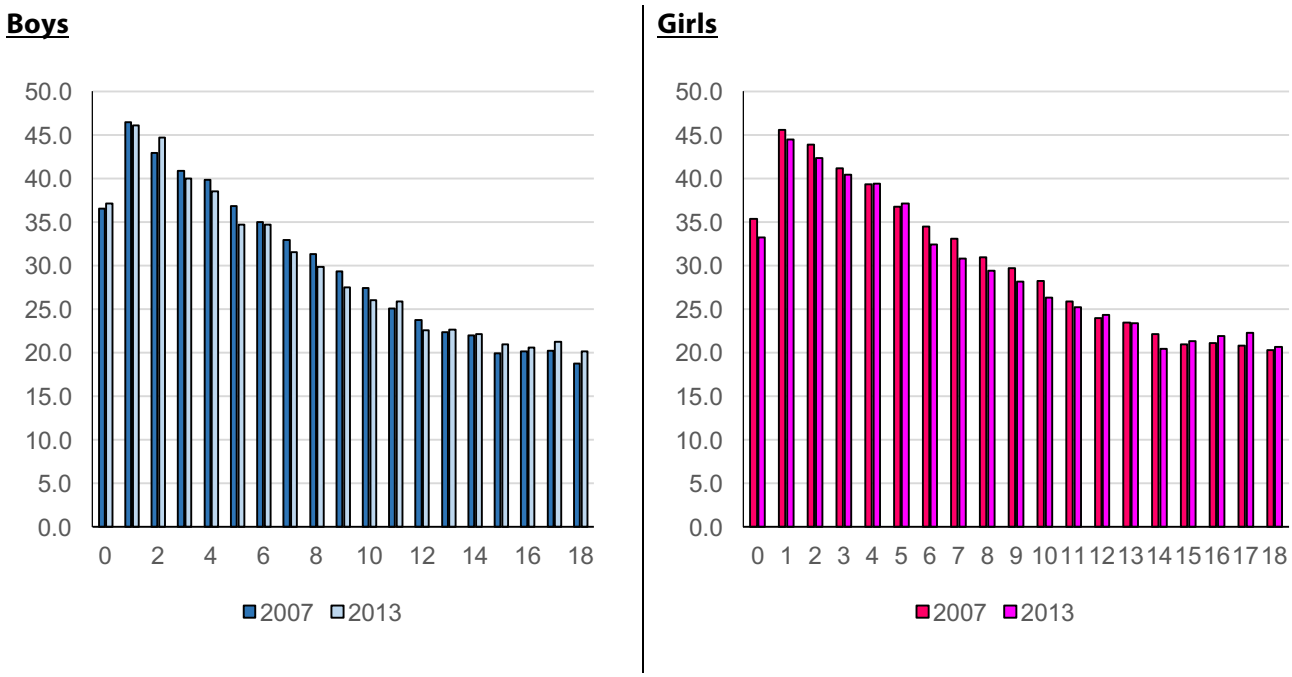


Figure 7. Proportion of children 0-18 years having ARI last month by residence, *Riskesdas* 2013

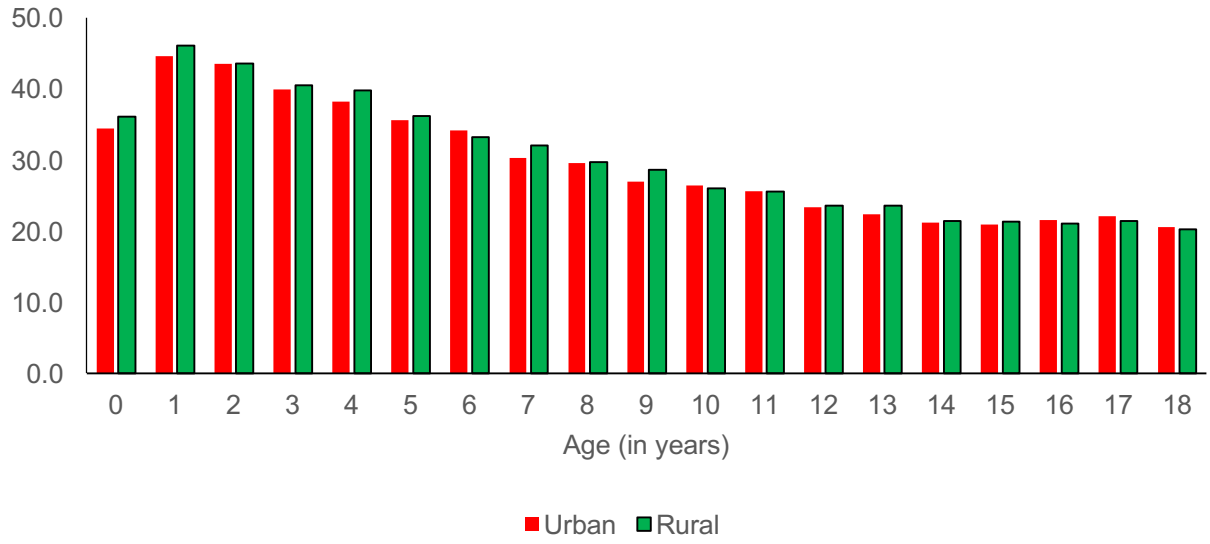


Figure 8 and **Figure 9** presented the proportions of ARIs by wealth quintiles and also by provinces. The occurrence of ARIs is 6.1 percent higher among children who are in the lowest quintile as compared to children in the highest quintile (32.4 percent and 26.3 percent, respectively). By province, the occurrence of ARIs among children 0-18 years of age declined slightly (only a 0.6 percent reduction) from 2007 to 2013. There are some provinces, such as Jawa Timur, Sulawesi Utara, Sulawesi Barat and Papua, where the occurrence of ARIs is increasing, while in some provinces it has declined very significantly: Bengkulu, Bangka Belitung, Kep. Riau, Gorontalo, Maluku Utara, and Papua Barat.

Riskesdas provides rather complete information about communicable diseases, including information on the incidence of communicable diseases among Indonesian children. To understand what level, the assessment tried to make a composite profile of the most common communicable diseases of Indonesian children, such as diarrhea, ARIs, pneumonia, coughing and pulmonary tuberculosis. All respondents were asked whether they have ever been diagnosed by health personnel to have to have these illnesses in the last month.

Figure 8. Proportion of children 0-18 years having ARI last month by wealth quintiles, *Riskesdas* 2013

Figure 9. Proportion of children 0-18 years having ARI last month by province, *Riskesdas* 2007 and 2013

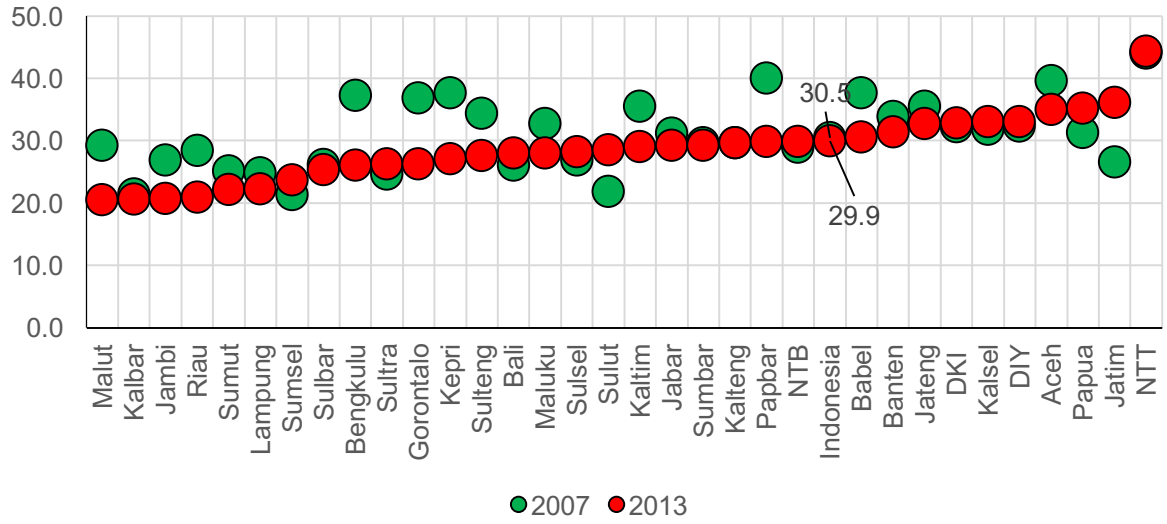
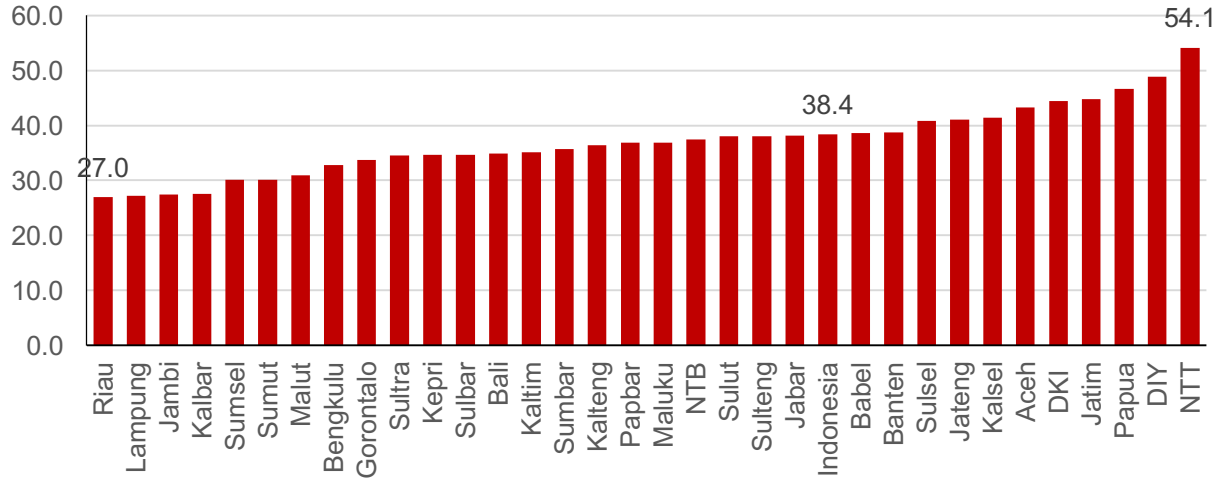


Figure 10 presents the results concerning the proportion of Indonesian children who were sick during the past one month. Nationally, about 38.4 percent of children aged 0-18 years were detected as being sick. The prevalence ranged from the lowest of 27 percent in Riau to the highest of 54.1 percent in NTT. There are 11 out of 33 provinces that have prevalences above the national average, and most of them are provinces in Java with large populations including: Jawa Timur, Jawa Tengah, DKI, Banten and DI Yogyakarta.

Figure 10. Proportion of children 0-18 years 'sick'[*)] last month by province, *Riskesdas* 2013



[*)] Composite of ARI, Diarrhea, Pneumonia, coughing, pulmonary tuberculosis →last month ever suffered and diagnosed by health personnel from ARI, diarrhea, pneumonia, coughing, pulmonary tuberculosis

Table 10 shows the prevalence of sick children by characteristics of residence, wealth and gender. The prevalence of sick children tends to be higher for younger ages compared to older ages. The level of prevalence was very similar for children who are living in urban areas as compared to those

who are living in rural areas. There are differences in prevalence for children in the lowest consumption quintile who are likely to have higher incidences as compared to those in the highest quintile of consumption. The difference varied from the lowest (3.2%) to the highest (10.2%).

Table 10. Proportion of children 0-18 years 'sick'*) last month by characteristics, *Riskesdas* 2013

Age (in years)	Residence		Wealth Quintiles					Gender	
	Urban	Rural	Poorest	Poor	Middle	Rich	Richest	Boys	Girls
0	42.1	42.6	46.5	42.5	44.4	43.0	36.5	44.4	40.2
1	54.5	55.3	57.6	56.5	55.0	56.7	48.8	55.6	54.2
2	52.6	52.8	56.5	54.0	53.7	51.8	48.7	53.8	51.6
3	49.0	48.1	51.1	49.6	48.8	48.3	45.7	48.8	48.4
4	46.8	47.5	49.0	47.8	50.9	45.9	42.7	47.2	47.1
5	44.1	43.7	46.8	42.7	45.5	44.1	41.0	43.1	44.8
6	41.8	40.5	41.8	41.8	42.6	42.2	37.3	42.3	39.8
7	39.2	39.4	41.9	40.3	40.1	40.1	34.6	39.9	38.6
8	38.3	36.8	40.6	36.6	38.5	38.1	34.0	38.0	37.0
9	35.0	36.4	37.7	38.0	38.0	34.0	31.6	35.7	35.8
10	35.2	33.5	38.6	33.8	36.1	33.4	30.7	33.7	35.0
11	34.3	34.2	39.4	34.7	35.3	33.7	29.2	34.3	34.1
12	32.4	31.8	36.1	32.2	33.1	31.1	28.8	30.9	33.3
13	30.9	31.6	37.3	31.2	31.3	30.0	27.3	31.1	31.4
14	31.9	29.8	33.5	30.6	32.9	31.1	26.3	31.8	29.7
15	30.9	30.2	32.7	32.2	30.4	28.8	29.5	30.6	30.5
16	31.2	29.4	34.1	30.1	29.0	31.4	28.3	29.8	30.9
17	31.9	30.4	32.8	30.6	33.1	30.9	28.8	30.7	31.6
18	30.8	28.5	30.4	30.2	31.6	30.6	25.9	29.2	30.3

*) Composite of ARI, Diarrhea, Pneumonia, coughing, pulmonary tuberculosis →last month ever suffered and diagnosed by health personnel from ARI, diarrhea, pneumonia, coughing, pulmonary tuberculosis

The next big concern is about malnutrition in children aged 0-18 years, starting with malnourished infants who are born regardless of gestational age. The normal weight at term delivery is 2500 - 4000 grams, and the normal length is 48 – 52 centimeters. A baby's birth weight or length at birth is an important indicator of the child's vulnerability/ risk of illnesses and chances of survival. Babies with birth weight <2500 grams and birth length <48 centimeters are considered malnourished and vulnerable. Low birth weight (LBW) is caused by preterm birth that is a low gestational age at birth (younger than 37 weeks of gestation) or the infant being small for gestational age, or a combination of both. The causes include mothers with young age, multiple pregnancies, poor nutrition, hypertension, alcohol abuse, smoking, and contamination, such as air pollution, lead exposure, etc.

Box 1. Definition of Terms

Low birth weight (LBW) is defined as a birth weight of live born infant of less than 2,500 grams regardless of gestational age.

Stunting refers to chronic malnutrition and is defined by an abnormally low height relative to a group of children of the same age and sex who have grown up under conditions that do not restrict growth. Stunted growth is a primary manifestation of malnutrition during fetal development brought on by the malnourished mother. Stunting provides a cumulative record of past and present growth restrictions affecting a child's length; it is commonly due to inadequate nutrition compounded with frequent infections, such as diarrhea, pneumonia, etc. The classification is based on height for age (HFA) as % of median reference value with the cut off points less than – 2 Z-score.

Wasting is sometimes referred to as acute malnutrition because it is believed that episodes of wasting have a short duration. Wasting can be caused by an extremely low energy intake, nutrient losses due to infection. The classification is based on weight for height (WFH) as % of median reference value with the cut off points less than – 2 Z-score.

Underweight is a term describing a human whose body weight is considered too low to be healthy. The classification is based on weight for age (WFA) as % of median reference value with the cut off points less than – 2 Z-score.

Riskesdas collects information on children under five who have a written health record or the mother's recall. The assessment here was based on children under five who have a health card. **Figure 11** shows the proportion of babies based on their size at birth for the years 2010 and 2013. The prevalence for LBW was slightly declined from 11.1 percent in 2007 to 10.2 percent in 2013. More babies at a normal weight (85 percent), and 4.8 percent babies with birth weight over 4000 grams.

The prevalence of LBW is varied from the lowest 7.2 percent in Sumatera Utara to the highest 16.9 percent in Sulawesi Tengah. There are 18 out of 33 provinces that have prevalence below the national average. There are some provinces, such as NTT, Kalimantan Tengah, Kalimantan Selatan, Sumatera Selatan, Kepulauan Riau, Sulawesi Utara, and Maluku Utara where the prevalence of LBW is decreasing very significantly, while some provinces stay the same, even increased, such as Maluku, Kalimatan Timur, Jawa Timur, Bengkulu, and Sumatera Barat (**Figure 12**).

Figure 11. Proportion babies with birth weight: 2010 and 2013

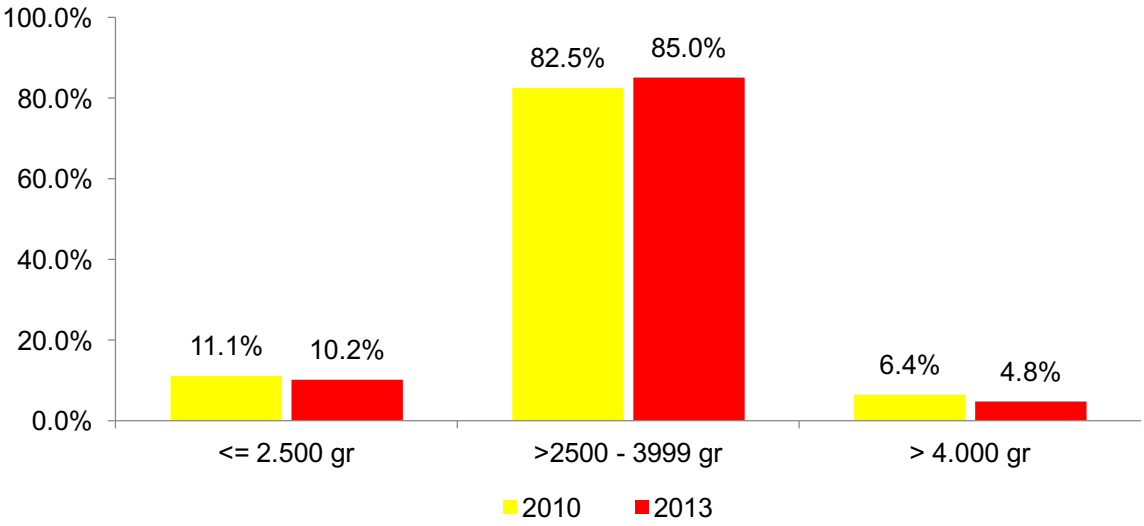


Figure 12. Proportion of Low Birth Weight (<2500 gr) babies by province, *Riskesdas* 2010 and 2013

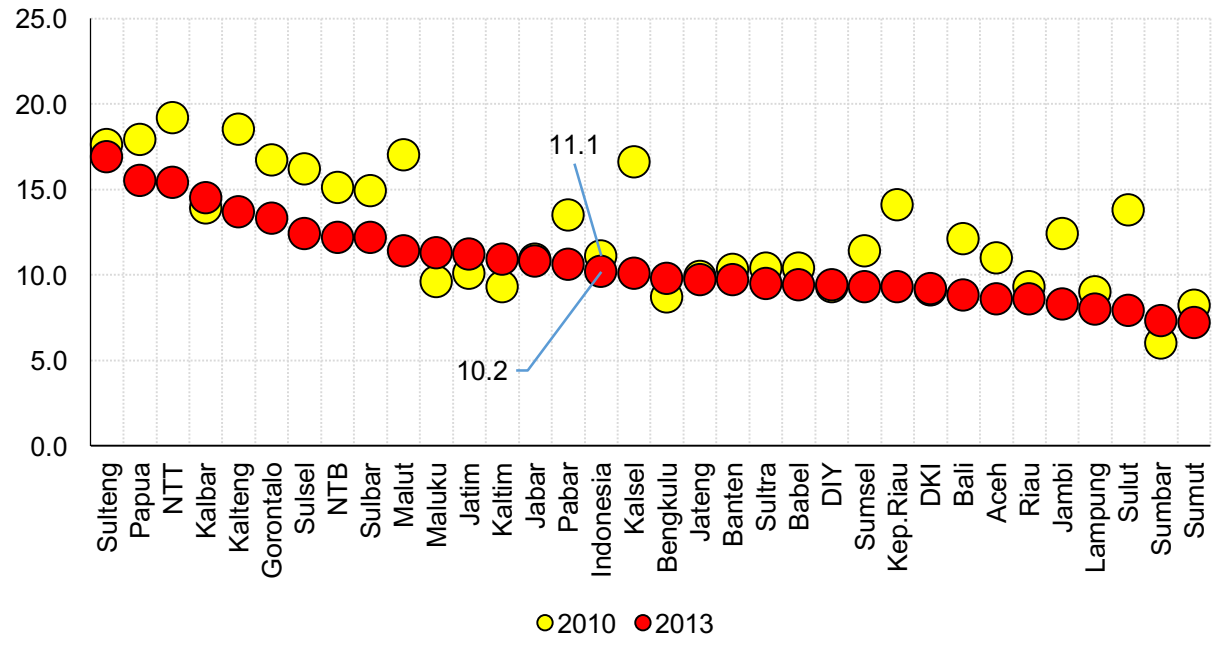


Figure 13 shows that 76.4 percent of Indonesian babies were born with a normal birth length of 48 to 52 centimeters, however 20.2 percent were born below the standard (<48 cm), and 3.3 percent born with birth length >52 cm. The variation of prevalences among provinces of babies born with birth length below standard is very wide (**Figure 14**) from the highest (NTT) 28.7% to the lowest (Bali) 9.6%.

Figure 13. Proportion babies with birth length: *Riskesdas* 2013

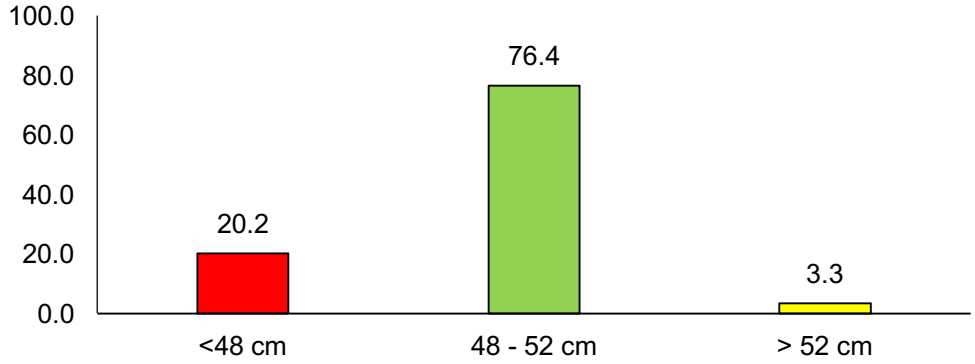


Figure 14. Proportion Babies with birth length <48 cm by province, *Riskesdas* 2013

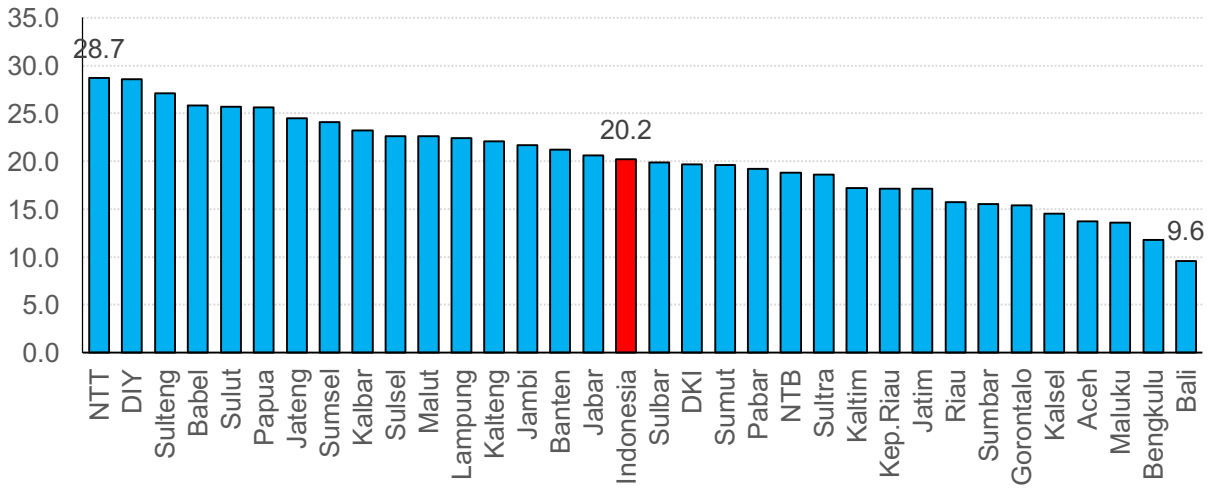
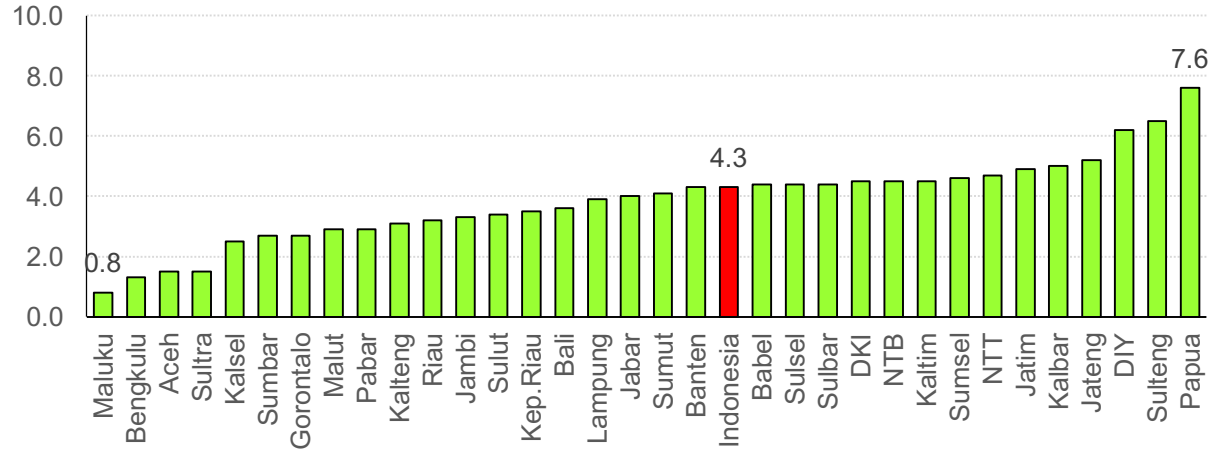


Figure 15 presents the proportion of babies born with birth weight <2500 grams and birth length <48 cm by province. Nationally, 4.3 percent of babies are born with combination of small size and stunting. There are 14 provinces above the national average with the highest proportion of 7.6 percent (Papua), and Maluku has the lowest prevalence (<1%).

Figure 15. Proportion of babies with birth weight <2500 gram and birth length <48 cm by province, *Riskesdas* 2013



The occurrence of infection by various diseases can be prevented by universal immunization of children, the six vaccines for preventable diseases include tuberculosis, diphtheria, whooping cough, tetanus, polio, and measles are crucial in reducing infant and child mortality. According to WHO guidelines, children are considered fully immunized when they have received one dose of the vaccine against tuberculosis (BCG), three doses each of the DPT and polio vaccines, one dose of measles, and four doses of the hepatitis B (HB) vaccine.

Riskesdas 2007, 2010, and 2013 collected information on immunization coverage for children under-five from the child's health card or the maternal and child health book. The enumerator copied the immunization dates directly into the questionnaires. The analysis of immunization coverage is based on children age 12-23 months who had completed BCG, 3 doses DPT and polio, measles, four doses of HB. This age group was selected because they are the youngest cohort of children who have reached the age by which they should be fully immunized.

Figure 16 presents the trend in the proportion of children 12-23 months of age who are fully immunized. Nationally, it has increased from 2007 to 2013 from 41.6 percent to 59.2 percent, however there are still 8.7 percent children who have never been immunized. By province, the range was quite wide from the lowest 29.2 percent in Papua to the highest 83.1 percent in DI Yogyakarta. However, almost all provinces show the tendency of increasing coverage of basic complete immunization from 2007 to 2013, except Maluku, Maluku Utara, Kalimantan Tengah, Sumatera Barat (**Figure 17**).

Figure 16. Proportion of children 12-23 months with complete basic immunization status: *Riskesdas* 2007-2013

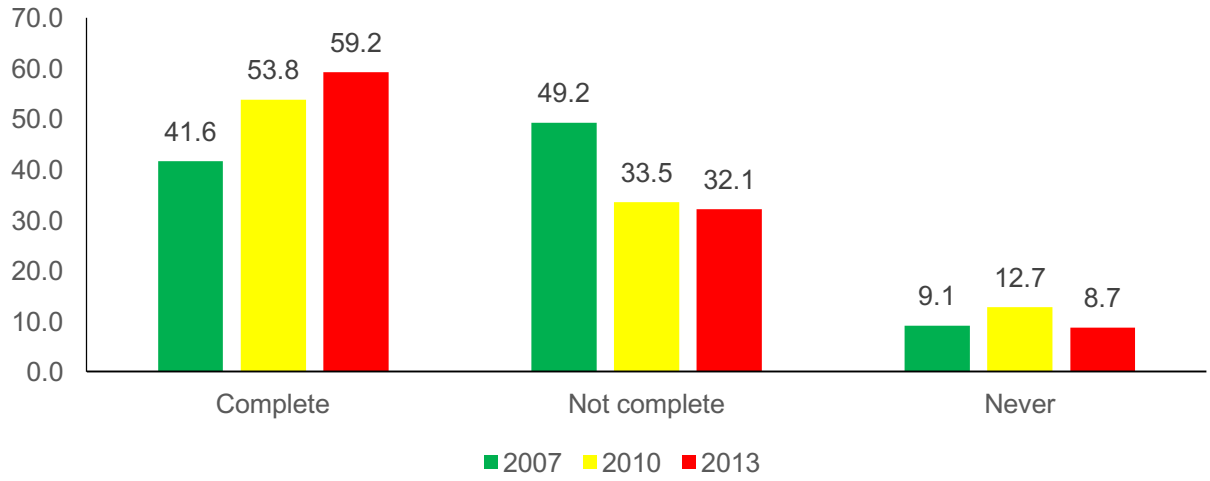
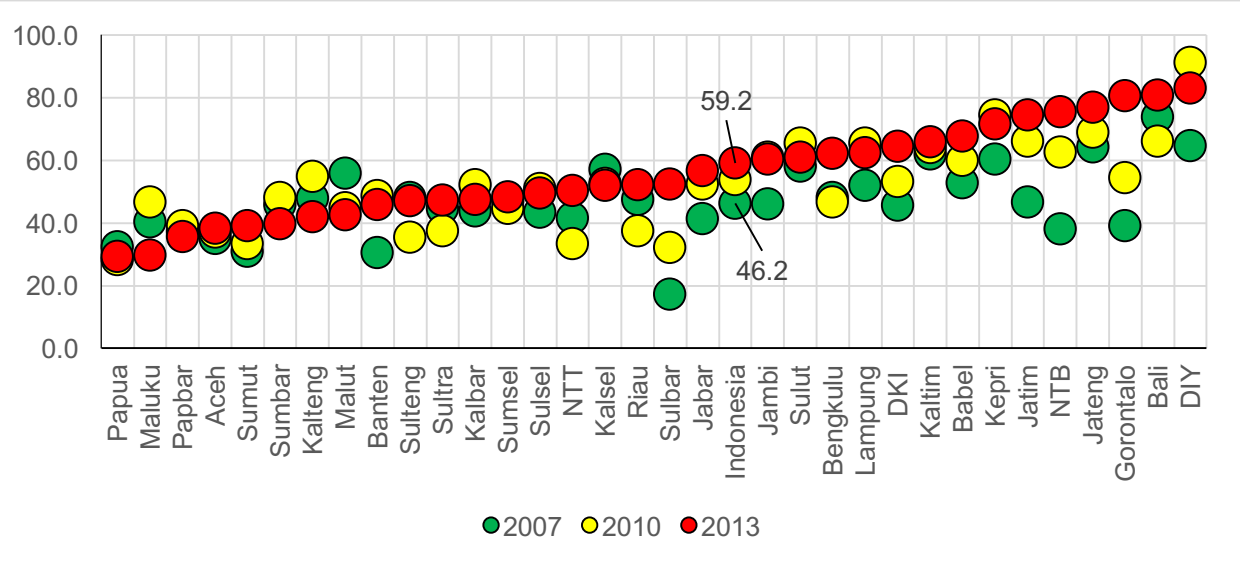
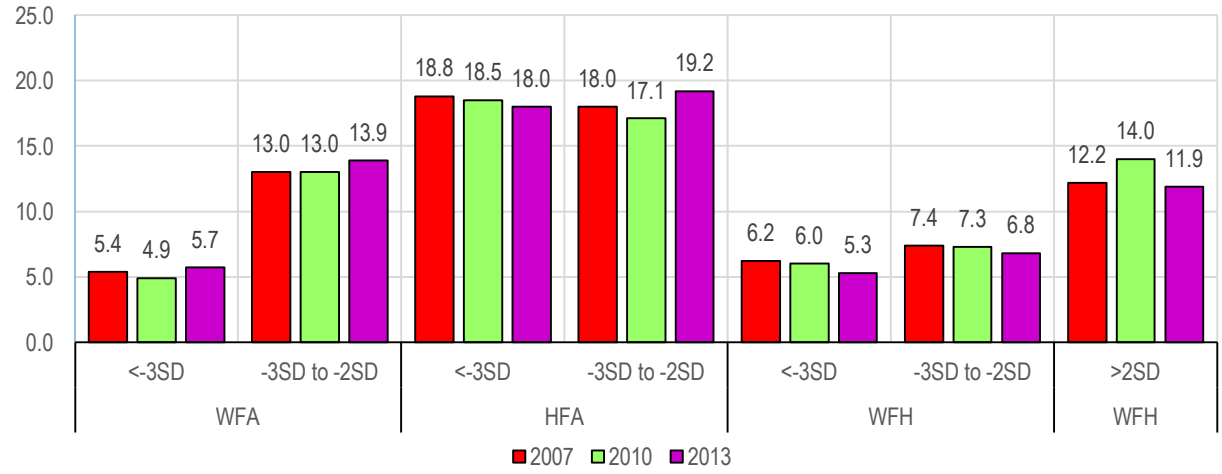


Figure 17. Proportion of children 12-23 months with complete basic immunization by province, *Riskesdas* 2007-2013



After birth weight and immunization, the next issue is malnourishment in Indonesia which is affecting more than 50 percent of children 0-18 years of age. The highest prevalence is stunting, or chronic malnutrition, measured as height for age (HFA), which occurs when a child fails to grow to be the expected height or length compared to a healthy child of the same age. The latest *Riskesdas* (2013) reported that almost four out of ten children under 5 were stunted (37.2%). The second problem is underweight, measured as weight for age (WFA), and is considered as both acute and chronic malnutrition. The prevalence of underweight for children under 5 was 19.6 percent. The third issue is wasting versus overweight, measured as weight for height (WFH). Wasting (<-2 SD WFH) and overweight (>+2SD WFH) are considered as acute malnutrition, as an effect of daily food intake whether is less or too much. Both the prevalence of wasting and overweight children under 5 year of age are at almost the same level (12.1% and 11.9%, respectively). The trends in the prevalence of stunting, underweight, wasting, and overweight from 2007 to 2013 are given in **Figure 18**. Nationally, the prevalence of malnutrition has been trending downward and upward, it is impossible to calculate the annual rate of change for malnutrition among children under 5.

Figure 18. Nutritional status for children 0-59 months: *Riskesdas* 2007-2013



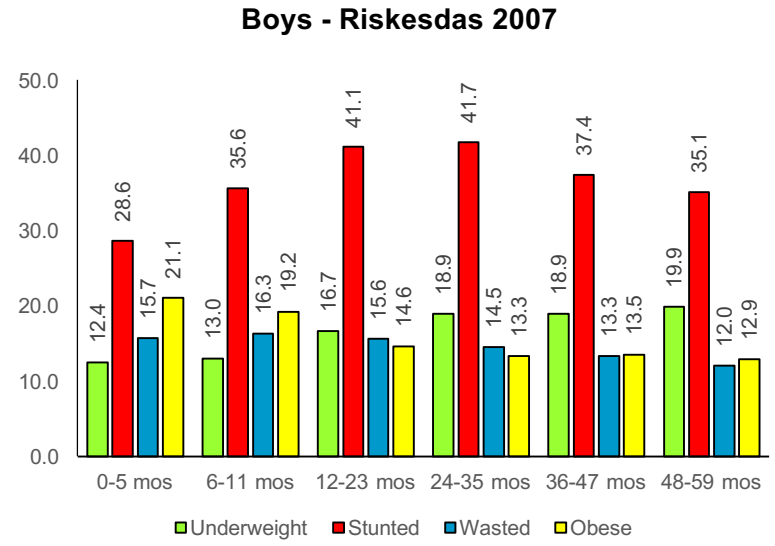
As explained in the previous paragraphs about low birth weight and length of birth below standard, actually malnutrition starts before birth for children in Indonesia. Starting with 20.2 percent stunted when they are born (**Figure 13**), and continue classified as stunted for age 0-5 months, up to 48-59 months. **Figure 19** shows the nutritional status (underweight, stunted, wasted, and overweight/obese) for children 0-59 months by gender for the years 2007 and 2013. Children after 2 years of age tend to regain weight, as evidenced by decreased rates of wasting for older children. The highest prevalence of wasting among children 1 to 2 years may be associated with infection rates that are likely high (see previous figures for diarrhea and ARI), and could be partly attributable to poor feeding practices and increasing the risk of infection. The prevalence of stunting for both boys and girls is increased by age and peak at 24-35 months (about 40%). However, boys were more likely to be stunted than girls for almost all ages (0-5 months to 36-47 months).

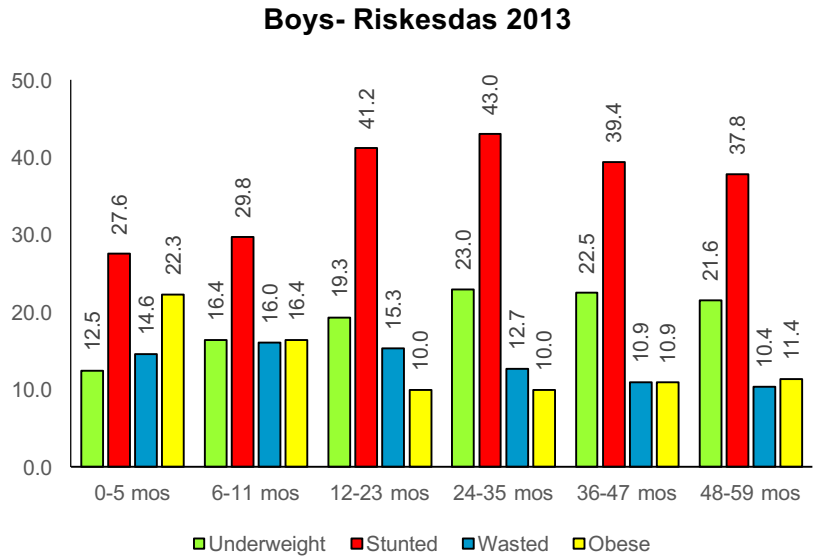
Overall, as mentioned before, and also presented in **Figure 20**, only 48.6 percent of Indonesian children are classified as normal for the year 2013. It was increased from 45.9 percent in the year 2007 to 49.1 percent in 2010, but declined in year 2013. It was increasing stunted-wasted from 2.1 percent (2010) to 2.5 percent (2013), as well as obese children from 3.9 percent (2007) to 5.1 percent (2013).

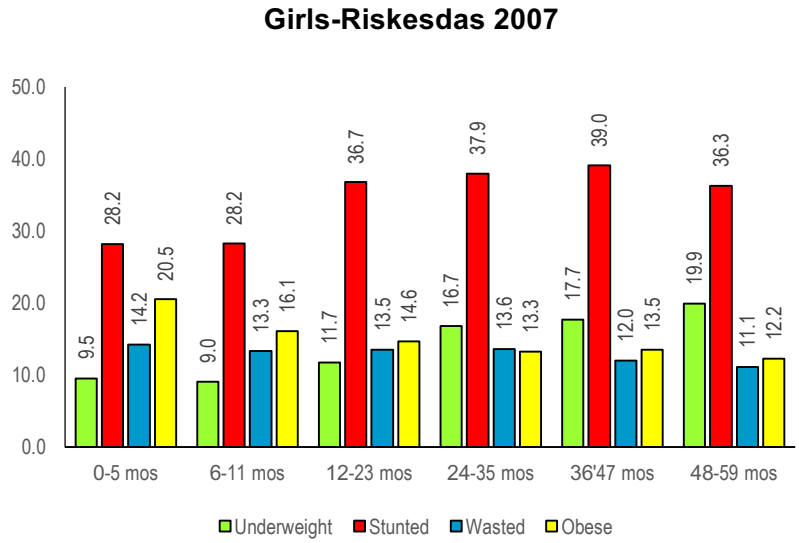
The prevalence of underweight, stunting, and wasting among children under 5 varies significantly by province. The distribution and trends from 2007-2013 can be seen in **Figures 21, 22,** and **23**. The prevalence of underweight is increasing from 18.4 percent in 2007 to 19.6 percent in 2013. It varies from the lowest in Bali (13.2%) to the highest in NTT (33.1%). The tendency of increasing prevalence is occurred almost for all provinces, except Kalimantan Tengah, NTB, Kalimantan Timur, and Bangka Belitung. The same situation for stunting, nationally the prevalence was 36.8 percent (2007) declined to 35.6 percent (2010), but increased again to 37.2 percent (2013). The prevalence of stunting was highest in NTT (51.7%), even though it declined from 58.4 percent in 2010. The lowest one was in Kepulauan Riau (26.3%), and seems to stay the same at that level from 2007, as well as 2010. And there were only 13 provinces where the prevalence of stunting was below the national level.

The only declining trend was found in the prevalence of wasting, from 13.6 percent (2007) to 12.1 percent (2013). This declining prevalence of wasting is assumed to result from food supplementation that has distributed among the poor during the period of 2007 to 2013. However, as usual the large difference in wasting among provinces also occurred from the lowest 8.8 percent in Bali to the highest 18.7 percent in Kalimantan Barat. In general, it showed declining prevalence of wasting in almost all provinces.

Figure 19. Nutritional status for boys and girls aged 0-59 months, *Riskesdas* 2007-2013







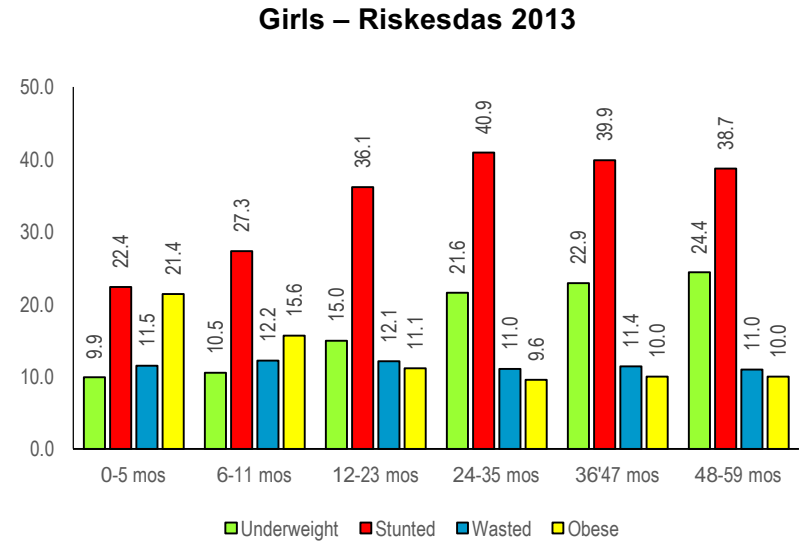


Figure 20. Proportion of Indonesian children 0-59 months by nutritional status (composite of weight and height): *Riskesdas* 2007-2013

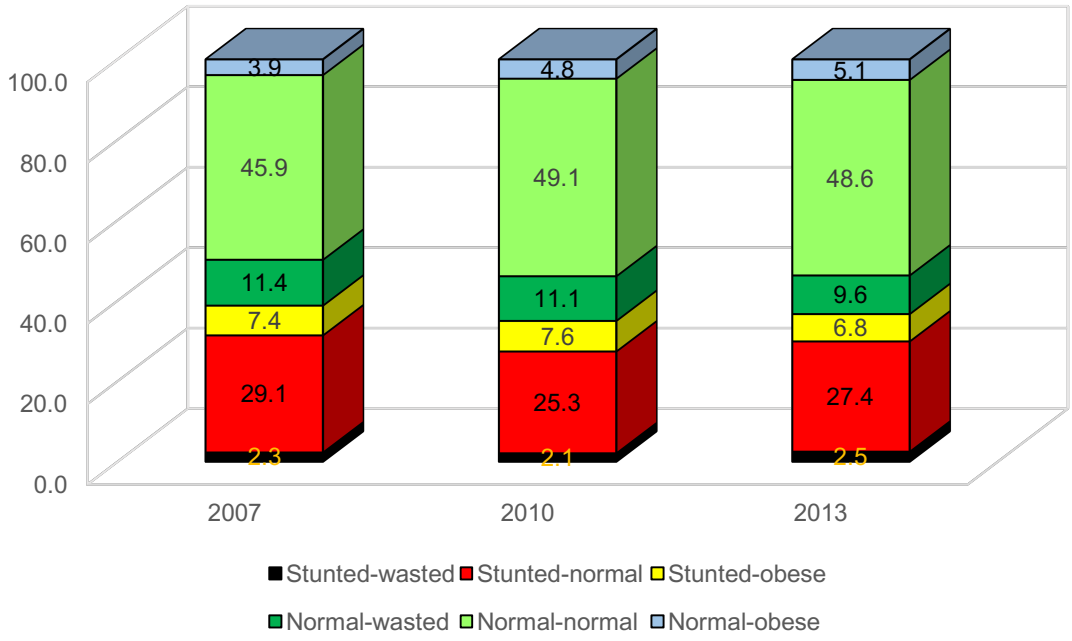


Figure 21. Prevalence of underweight (WFA<-2SD) for children 0-59 months by province, *Riskesdas* 2007-2013

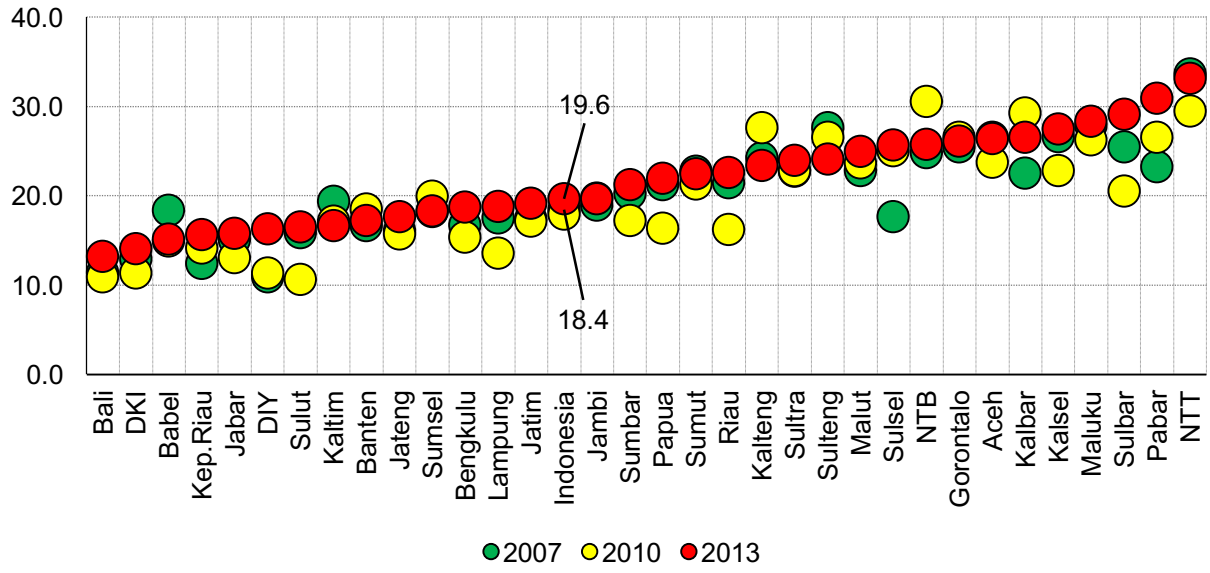


Figure 22. Prevalence of stunted (HFA<-2SD) for children 0-59 months by province, *Riskesdas* 2007-2013

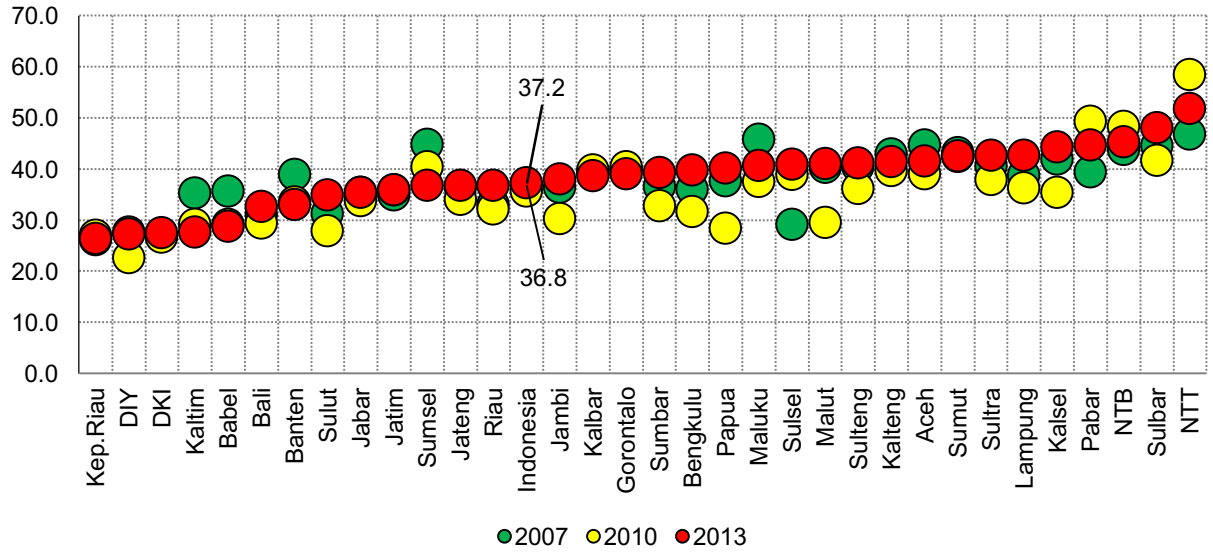
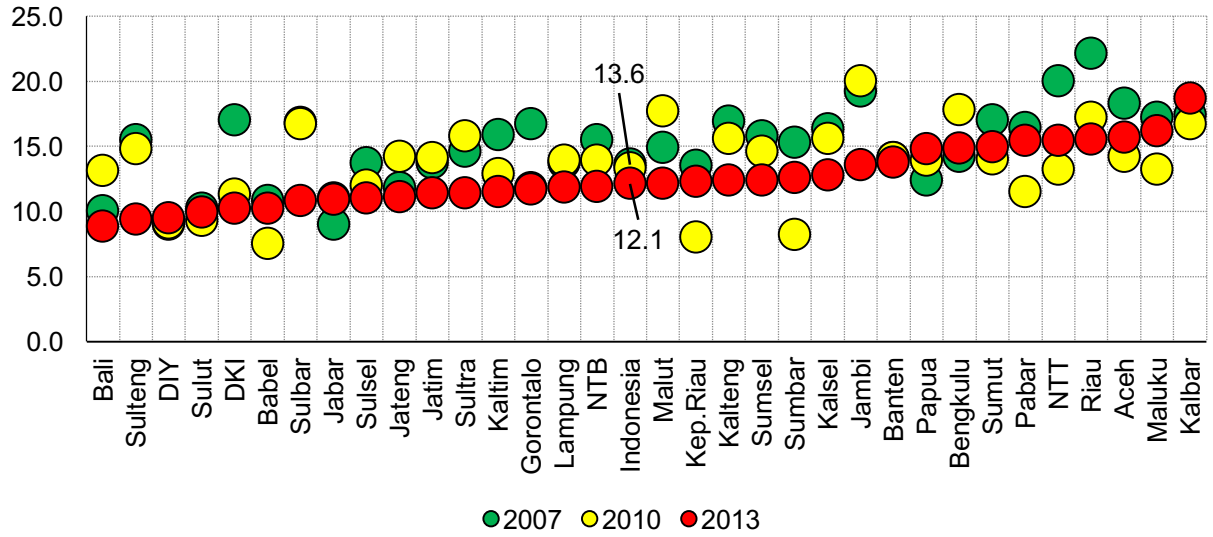


Figure 23. Prevalence of wasted (WFH<-2SD) for children 0-59 months by province, *Riskesdas* 2007-2013



Figures 24, 25 and **26** present the district variations in terms of prevalence of underweight, stunting, as well as wasting for children under age 5 in 2013. These figures present the disparity of malnourished prevalence for children under 5 years among districts within each province. For the prevalence of underweight as shown in **Figure 24**, large differences occurred in Sulawesi Barat, Maluku Utara, Sulawesi Tenggara, Maluku, Papua Barat, Kep. Bangka Belitung, and also DI Yogyakarta. Meanwhile, for the prevalence of stunting large differences occurred in Sulawesi Barat, DKI Jakarta, Kep. Bangka Belitung, Sulawesi Tenggara, and Nusa Tenggara Barat (**Figure 25**).

Figure 24. Prevalence of underweight (WFA<-2SD) for children 0-59 months according to district variation by province, *Riskesdas* 2013

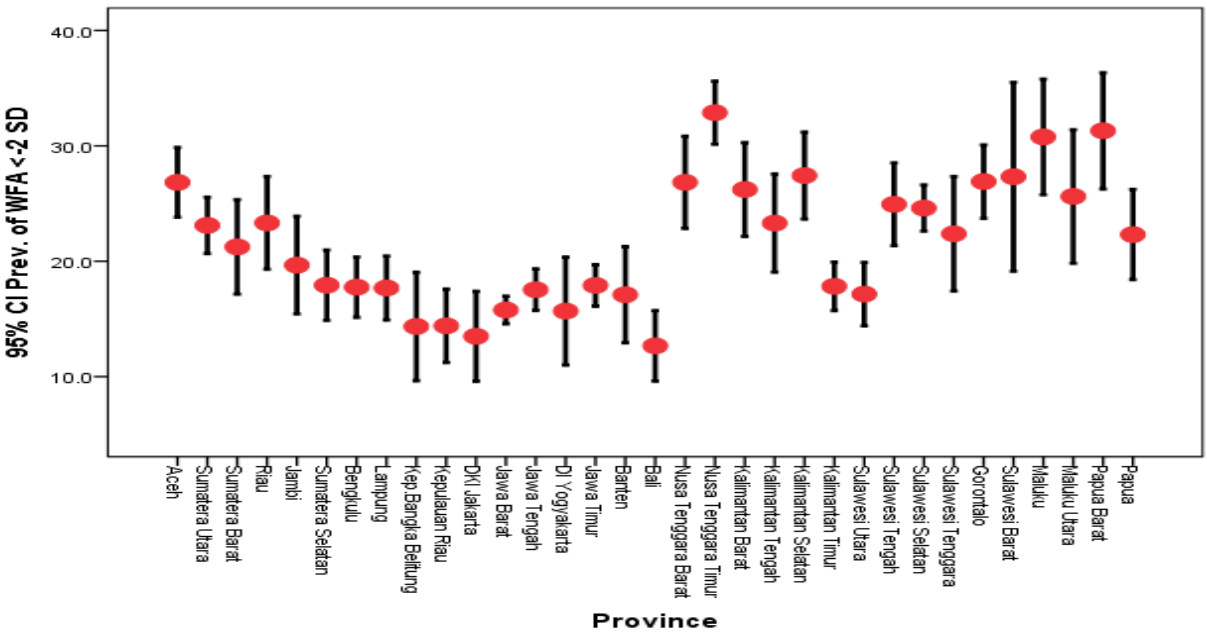
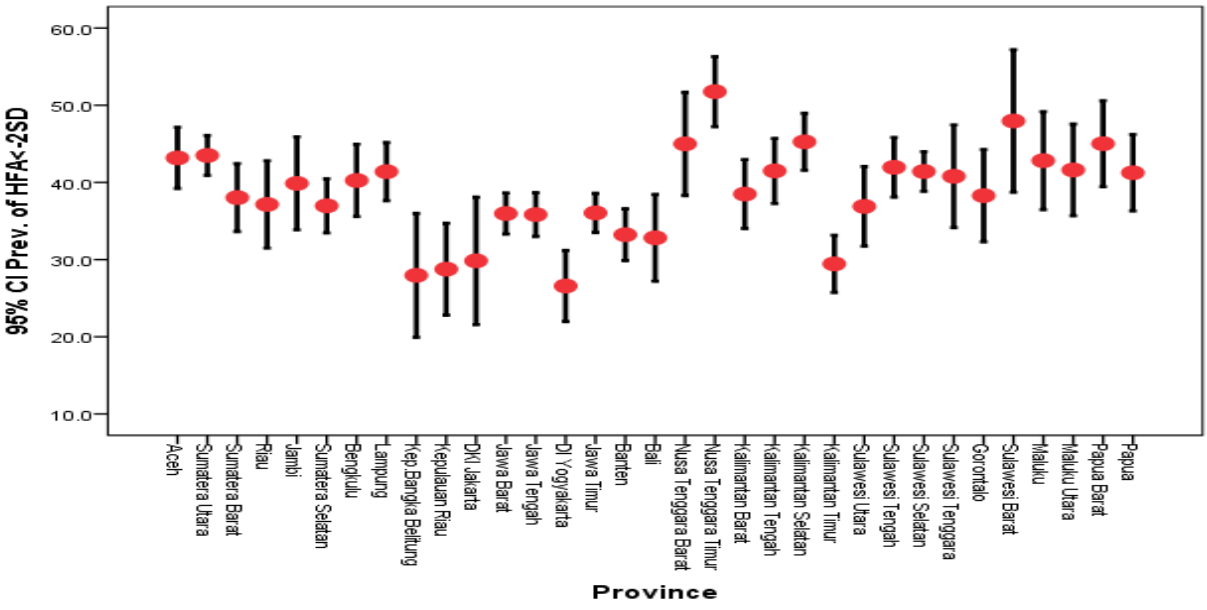
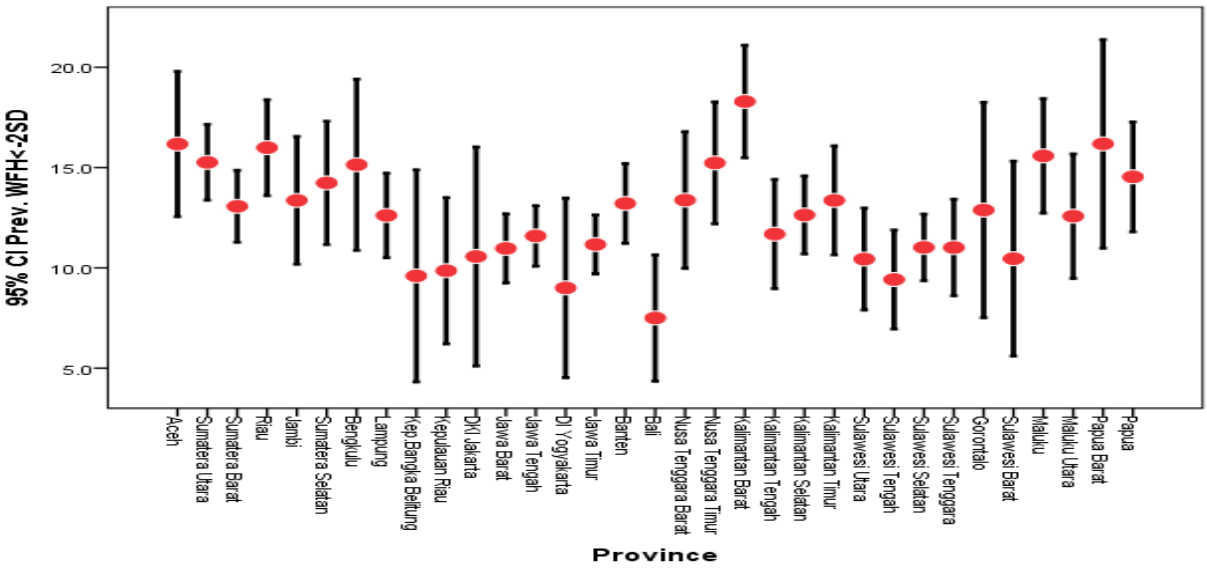


Figure 25. Prevalence of stunted (HFA<-2SD) for children 0-59 months according to district variation by province, *Riskesdas* 2013



Very large differences were found in the prevalence of wasting (**Figure 26**) explaining that food supplementation distribution may not be effective enough to reduce the problem. It could be because the number of affected children is too many, or it was not long enough to give food supplementation, or perhaps other family members also have consumed the food.

Figure 26. Prevalence of wasted (WFH<-2SD) for children 0-59 months according to district variation by province, *Riskesdas* 2013



One of the reasons why the nutritional status of children under 5 has not improved, perhaps because of declining coverage of children coming to the *Posyandu* for regular monitoring of their growth. **Figure 27** gives the evidence about the proportion of children under 5 years with growth monitoring within the last 6 months from 2007 to 2013. More children (34.3%) have never come to *Posyandu*, and only 44.6 percent children have come more than 4 times at the last 6 months. Monthly monitoring is very important to evaluate a child's growth, if it is deteriorating then there is still the opportunity for improvement.

Figure 28 presents the trends of growth monitoring ≥ 4 times within the last 6 months for children under 5 years of age by province from 2007 to 2013. It varies from the lowest in Sumatera Utara (only 12.5%) to the highest in DI Yogyakarta (79%). Almost all provinces showed a declining coverage, except NTB and Jawa Timur.

Figure 27. Proportion of children under-fives years with growth monitoring within the last 6 months, *Riskesdas* 2007-2013

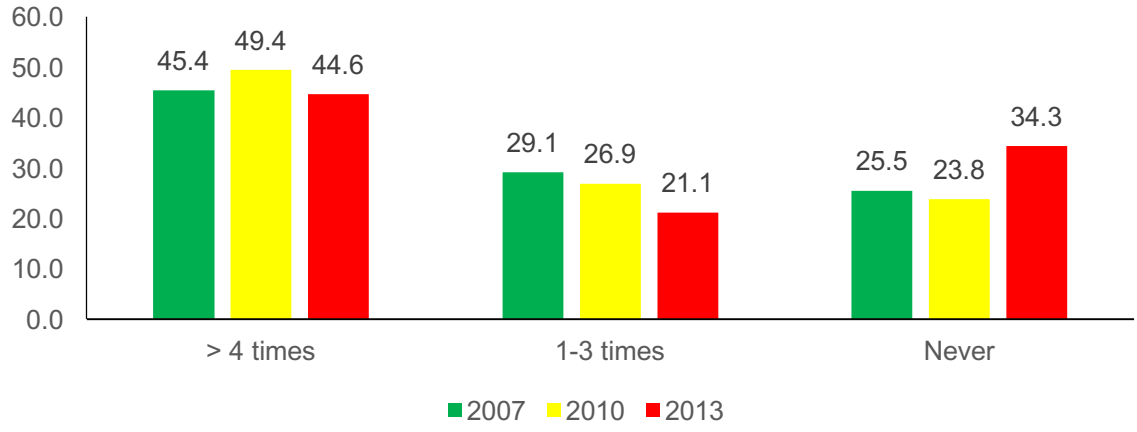
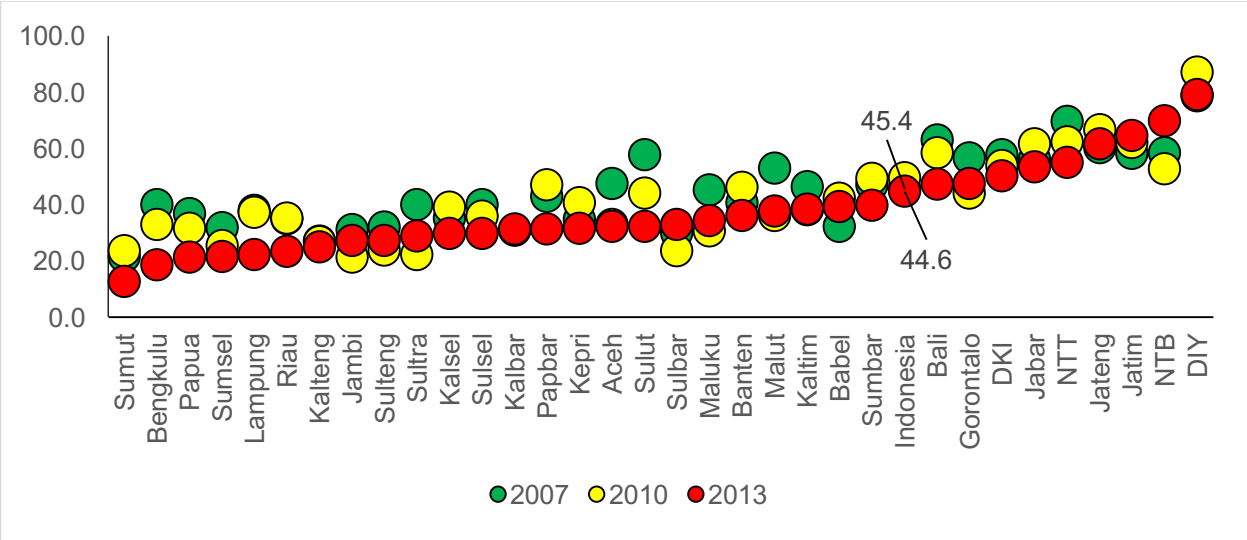
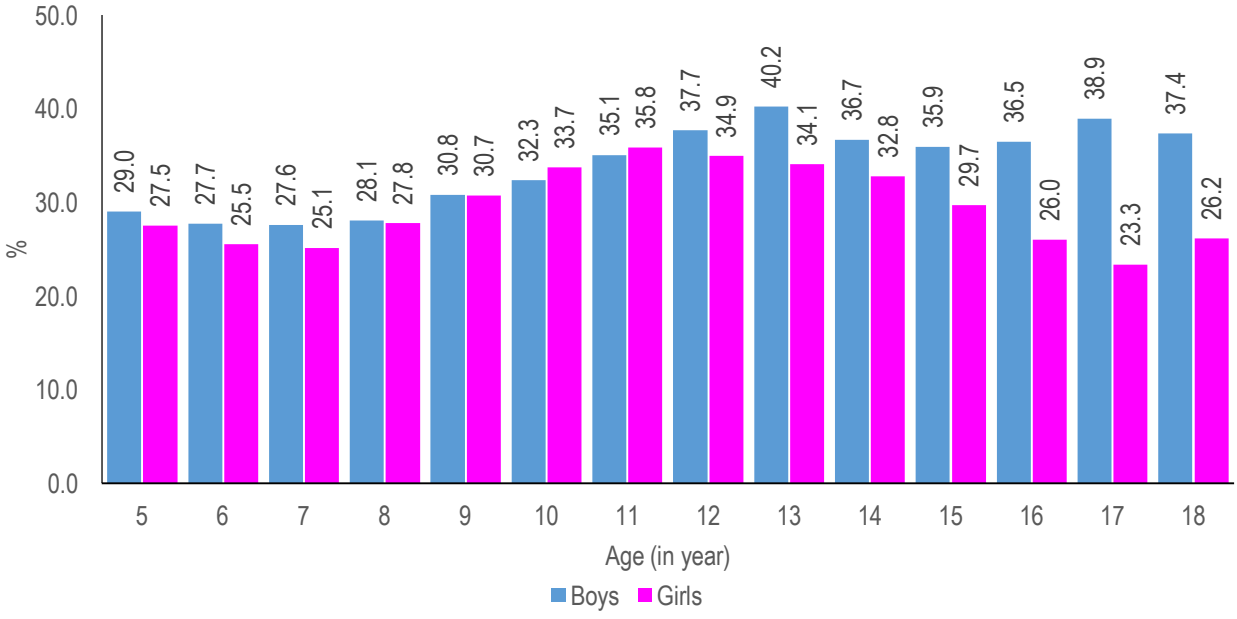


Figure 28. Proportion of children under-fives years with growth monitoring ≥ 4 times within the last 6 months by province, *Riskesdas* 2007-2013



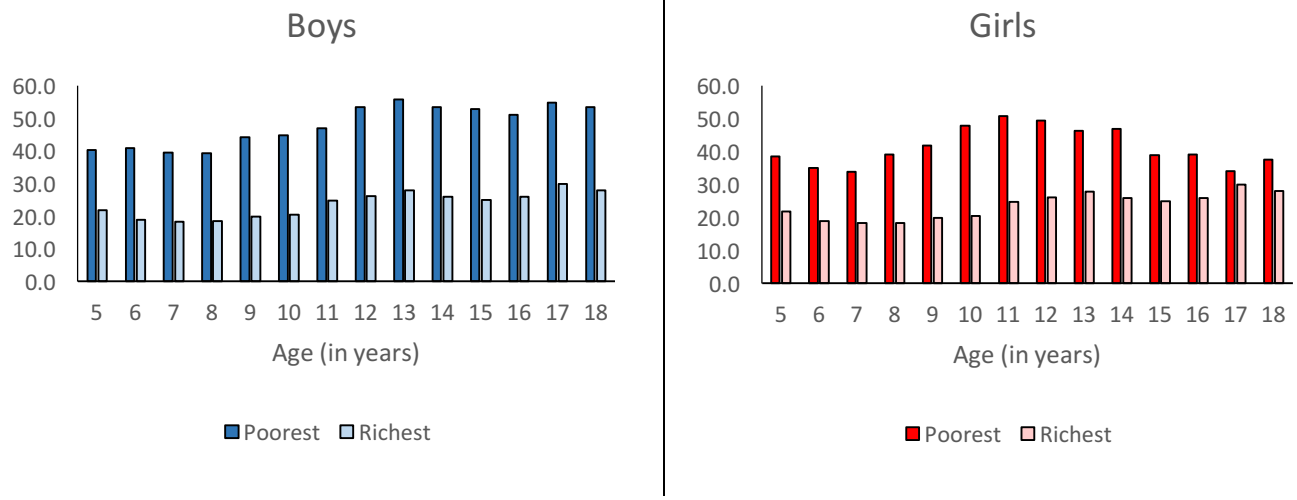
With all problems with children under 5, malnutrition continues to the older ages from 5 to 18 years. **Figure 29** presents the prevalence of stunted children 5-18 years by gender according to *Riskesdas* 2013. It shows that the peak was 40.2 percent for boys age 13 years old, and 35.8 percent for girls age 11 years old. One can explain that they were born 11-13 years ago when crisis happened from their mother who gets pregnant in the years from 1998 to 2000.

Figure 29. Prevalence of stunted children 5-18 years by gender, *Riskesdas* 2013



As stated before that stunting is chronic malnutrition which result in a child failing to grow because of several factors that may relate to poverty. **Figure 30** presents evidence that large differences in stunting occur between the poorest and the richest in terms of the magnitude of stunting. It is interesting to note that even among the richest quintile that the prevalence of stunting still exists, it could be related to nutrition knowledge and behavior.

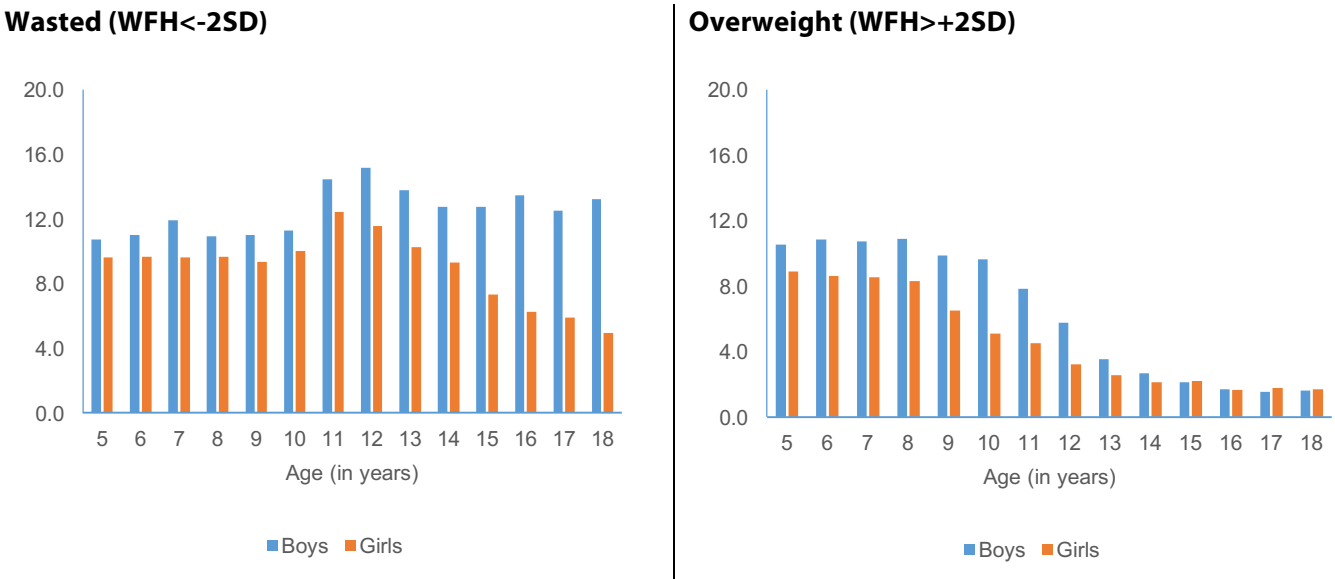
Figure 30. Prevalence of stunted children 5-18 years by gender and wealth quintiles, *Riskesdas* 2013



Overall, the prevalence of wasting in 2013 among children 5 to 18 years is almost the same level with children under 5 years of age, it's about 11 percent. **Figure 31** shows that the peak is among children at age 11 years for girls and at age 12 years for boys. The prevalence of wasting is higher among boys than girls. As mentioned before wasting is the condition of acute malnutrition, as an effect of less daily food intake. The prevalence of wasting is higher among boys and may relate to their physical activity which is usually more active than girls.

On the other hand, overweight for children age 5 to 18 years has not been too high compared with stunting and wasting, except for age 5 to 10 years (about 10 to 11%). The prevalence of overweight children is declining for children age 11 to 18 years. The same pattern with wasting, the prevalence of overweight is more likely higher among boys than girls for age 5 to 14 years, then stays at the same level for ages 15 to 18 years.

Figure 31. Prevalence of wasted and overweight children 5-18 years by gender, *Riskesdas* 2013



Comparing Indonesian children with the 2007 WHO standards (WHO, 2007) for mean height as presented in **Figures 32** and **33**, it is clear that the difference is very wide when they reach age 18 years meaning the Indonesian children chronically fail to grow which is evidence that they were born also from stunted mothers.

Figure 32. The change of mean height for Indonesian children 5-18 years compare to 2007 WHO standards by gender, *Riskesdas* 2007-2013

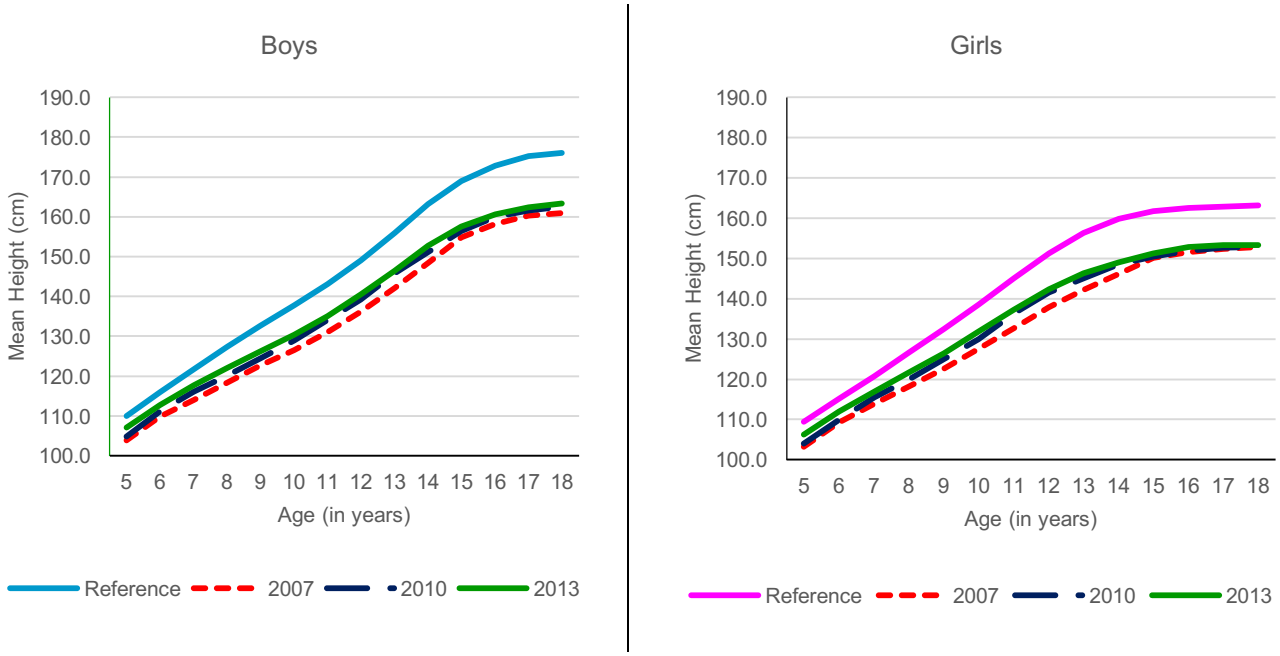
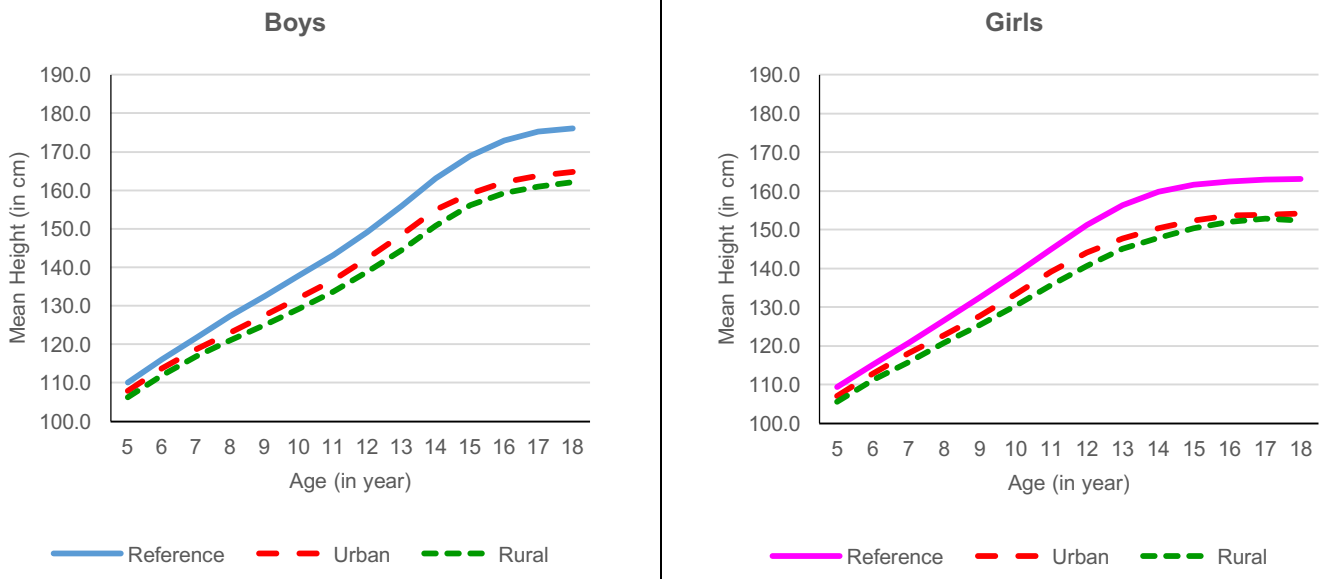


Figure 33. The change of mean height for Indonesian children 5-18 years compare to 2007 WHO standards by gender and residence, *Riskesdas* 2013



The mean height difference to the 2007 WHO standards in 2013 was about 12.5 cm for boys age 18 and 9.8 cm for girls at the same age. These gap differences relatively reduce compared to the 2007 mean height for the same age for boys as well as for girls, or it has improved in mean height for Indonesian children. The differences in mean height by residence as shown in **Figure 33**, boys who

live in urban are more likely taller 2.7 cm than boys who are live in rural area when they reach age 18 year, and for girls, the difference is 1.7 cm between urban and rural.

The intergenerational influences is one explanation for this condition. **Riskesdas** 2007 and 2010 show the evidence for the prevalence of stunting among women at reproductive ages 15-49 years which was about 10 percent (the mean height <145 cm) or about 30 percent (the mean height <150 cm). The condition is getting worse when the pregnancy occurs at younger ages (<20 years).

The direct cause of malnutrition is associated with food intake as a result of unbalanced, insufficient of less intake cumulatively, and also infections and malnutrition have always been associated. When children do not have enough food intake for a long time, they will become severely malnourished and associated with poor immune response to infection. Severe malnutrition, especially in young children can lead to death. Chronic malnutrition refers to lower intake of nutrients than the body needs for a long period of time. The occurrence of stunting in Indonesia could be because of hunger, combined with infectious diseases as explained in the previous section.

Table 11 and **Table 12** present the mean intake of some nutrients (energy, carbohydrate/CHO, protein, fat, and fiber) by age and gender based on data from *Riskesdas* 2010. Comparing with the Indonesia recommended dietary allowance (RDA), for younger children age 0 to 3 years, the mean intake is more likely to exceed the RDA (>100% to RDA) for energy, CHO, protein, and also fat (Kartono, D. et.al, 2012). **The consumption levels for energy, CHO and fat start to deteriorate from age 4 up to age 18 for both boys and girls. The protein intake is fine up to age 6, then falling from age 7 to age 18.** The type of food eaten by Indonesian children is more likely to contain less fiber, as seen in **Table 12**, the fiber intake is only less than 20 percent of the RDA for boys and girls at all ages. If this daily intake occurs for several years then undernourished children that are chronically malnourished are more likely to become short. For girls are more likely to give birth to smaller sized babies who will later have lower levels of educational achievement.

Table 11. Mean Nutrient intake by age and gender, *Riskesdas* 2010

Age (in years)	Boys					Girls				
	Energy Kkal	CHO (gram)	Protein (gram)	Fat (gram)	Fiber (gram)	Energy Kkal	CHO (gram)	Protein (gram)	Fat (gram)	Fiber (gram)
0	843.6	107.1	26.0	30.7	1.1	804.3	104.9	25.8	29.2	1.0
1	1289.2	175.4	47.7	46.1	2.7	1201.3	161.1	43.7	42.6	2.7
2	1558.3	210.9	57.8	53.9	3.6	1485.9	201.0	55.8	50.7	3.6
3	1510.7	206.7	54.9	51.3	4.1	1461.5	200.9	53.6	49.4	3.9
4	1456.5	203.9	52.9	47.8	4.4	1341.0	188.0	47.7	43.9	4.3
5	1362.0	195.2	47.6	42.8	4.6	1291.5	183.5	44.7	41.6	4.6
6	1287.8	185.3	45.3	39.9	4.8	1263.2	182.0	44.0	39.8	4.8
7	1281.3	188.0	44.4	38.7	5.1	1260.5	180.6	44.1	39.5	5.0
8	1328.9	193.7	45.2	40.7	5.3	1268.0	182.2	44.5	39.4	5.2
9	1292.5	189.6	45.8	40.0	5.3	1282.6	186.2	44.4	39.9	5.5
10	1319.5	195.0	44.5	39.4	5.6	1264.8	185.4	43.9	38.5	5.4
11	1349.9	200.3	46.5	40.2	5.7	1288.7	188.2	45.1	39.3	5.6
12	1355.4	198.9	46.8	41.6	5.9	1308.2	190.6	44.9	39.9	5.8
13	1384.1	206.7	47.0	40.0	5.9	1287.3	188.2	45.1	39.6	5.7
14	1390.5	209.7	46.4	39.7	6.1	1276.9	187.9	44.6	37.6	5.9
15	1459.7	219.9	49.5	42.3	6.6	1280.1	187.4	44.9	39.0	5.8
16	1459.5	219.8	49.3	41.7	6.5	1303.5	189.8	45.9	40.2	6.0
17	1526.6	234.1	51.0	41.9	6.8	1280.9	186.6	44.9	38.5	5.9
18	1494.6	229.2	48.9	41.5	6.4	1303.3	189.6	45.3	39.6	6.1

Table 12. Mean Nutrient intake (% to RDA) by age and gender, *Riskesdas* 2010

Age (in years)	Boys					Girls				
	Energy	CHO	Protein	Fat	Fiber	Energy	CHO	Protein	Fat	Fiber
0	116.4	130.6	144.4	85.4	10.6	110.9	128.0	143.4	81.1	10.4
1	114.6	113.2	183.4	104.8	17.1	106.8	103.9	168.3	96.8	16.6
2	138.5	136.1	222.5	122.4	22.2	132.1	129.7	214.7	115.1	22.2
3	134.3	133.4	211.3	116.5	25.9	129.9	129.6	206.3	112.2	24.3
4	91.0	92.7	151.1	77.1	19.8	83.8	85.4	136.3	70.8	19.6
5	85.1	88.7	136.0	69.1	20.7	80.7	83.4	127.7	67.0	20.8
6	80.5	84.2	129.4	64.4	21.9	78.9	82.7	125.6	64.3	21.9
7	69.3	74.0	90.6	53.8	19.6	68.1	71.1	90.0	54.9	19.4
8	71.8	76.3	92.3	56.5	20.5	68.5	71.7	90.8	54.7	19.9
9	69.9	74.7	93.4	55.6	20.3	69.3	73.3	90.5	55.4	21.0
10	62.8	67.5	79.4	56.2	19.3	63.2	67.4	73.1	57.4	19.4
11	64.3	69.3	83.0	57.4	19.8	64.4	68.4	75.2	58.6	20.1
12	64.5	68.8	83.5	59.4	20.2	65.4	69.3	74.9	59.5	20.6
13	55.9	60.8	65.3	48.1	17.0	60.6	64.4	65.4	55.8	19.1
14	56.2	61.7	64.5	47.8	17.5	60.1	64.4	61.9	53.0	19.7
15	59.0	64.7	68.7	51.0	18.8	60.2	64.2	62.4	54.9	19.4
16	54.6	59.7	74.6	46.9	17.7	61.3	65.0	77.9	56.6	20.0
17	57.1	63.6	77.3	47.1	18.4	60.3	63.9	76.1	54.2	19.8
18	55.9	62.3	74.0	46.7	17.4	61.3	64.9	76.8	55.8	20.3

Smoking is another risk factor for Indonesian children. It causes serious risks to respiratory health both in the short and long terms. The earlier children become regular smokers and persist in the habit as adults, the greater the risk of developing lung cancer or heart disease.

According to *Riskesdas* 2013, the proportion of children who have ever smoked continues to increase by age. It starts at age 10 for boys, or perhaps younger which can be seen at **Table 13** that 0.4 percent of boys aged 10 years are classified as ex-smokers. The proportion of daily smokers among boys increases with age from 0 percent of 10 year olds to 28.7 percent of 18-year olds. Overall, almost half (43.9 %) of boys age 18 are smokers.

Table 13. Proportion smoking among children 10-18 year by gender, *Riskesdas* 2013

Age (in years)	Boys				Girls			
	Daily smokers	Occasional Smokers	Ex-Smokers	Not smokers	Daily smokers	Occasional Smokers	Ex-Smokers	Not smokers
10	0.0	0.1	0.4	99.4	0.0	0.0	0.0	100.0
11	0.1	0.7	0.7	98.6	0.0	0.0	0.0	99.9
12	0.3	1.0	0.9	97.8	0.0	0.0	0.0	99.9
13	1.0	2.2	2.0	94.8	0.0	0.1	0.0	99.9
14	4.0	5.2	2.7	88.1	0.0	0.1	0.1	99.7
15	8.6	9.8	3.7	77.9	0.0	0.1	0.2	99.6
16	15.1	13.3	3.6	68.0	0.1	0.2	0.2	99.5
17	22.8	15.4	4.2	57.5	0.1	0.3	0.3	99.2
18	28.7	15.2	4.0	52.1	0.4	0.2	0.4	98.9

6. Discussion: Health and Nutrition Care for Indonesian Children

Most health and nutrition services for children in Indonesia are provided in health facilities by the local government. The core interventions usually focus only on maternal care and children under 5 years of age, including health promotion, growth monitoring and promotion, nutrition education, counseling during antenatal and postnatal services, and breastfeeding practices. The services reach communities through health facilities, such as *Polindes, Poskesdes, Pustu,* and *Puskesmas*, and also *Posyandu* or *Pos PAUD*. However, weaknesses in the health system and issues associated with institutional capacity to cover all children 0-18 years of age require increases in staffing and better distribution of facilities and staff.

The national policies on the school health program (*Usaha Kesehatan Sekolah/UKS*) have been developed since the 1950s, and in the 1970s a task force for education and health was formed to implement health at the primary school, and in 1984 a school health policy was established memorandum of understanding (MOU) that involved four ministries (education, health, religious affairs, and home affairs), continued with revised MOU in 2003. However, currently this *UKS* program is not sustainable or many units do not operate optimally.

UKS should be revitalized for the purpose of improving the quality of education and student learning achievement by strengthening healthy life skills of students and preventing school children from illness such as diarrhea, or acute respiratory diseases, and other infectious diseases. Actually, the major activities of the *UKS* program have been set completely to make children physically healthy, including such activities as: i) health education (little doctors, and hand washing campaign); ii) health services at school-*UKS* room (height and weight measurements, healthy canteen, immunization, deworming, iron tablets for girls, health check, referral to health center/*Puskesmas* or hospital); and iii) healthy school environment (improving school sanitation facilities, access to safe and clean water, greening of schools).

Another program which should also be provided and maintained is the food supplementation program. Indonesian children who attend the school, are usually deficit in nutrients intake, providing healthy food to children will improve their capacity to learn. As explained before, the deficit in nutrient intake starts at age 7 and continues to age 18. A program providing healthy meals for school age children is a must to help prevent hunger and malnourishment.

Food supplementation for school age children is an expensive program. However, each district could source more foods locally and provide complimentary educational activities to students that emphasize food, farming, and nutrition. With the current condition that almost 40 percent of all Indonesian children are stunted, chronically malnourished and unhealthy, the nationwide program is needed to enrich children's bodies and minds. Besides, this program may also support local economies where foods are produced to supply school canteens.

Indonesia, with all the variations of food that can be produced locally, will bring opportunities for local food producers. It is a win-win solution to bring farm to school which includes of all types of producers and food business including farmers, fishermen, as well as food distributors. Investing in school health and nutrition is a strategic element in the effort to develop healthier and better nourished children to stay in school longer, learn more, and become healthier and more productive adults. Girls who stay in school longer will tend to delay childbearing longer and will reduce intergenerational effect of lowered birth rate and better birth outcomes, and reduce the

number of low birth weight babies. Improving health and nutrition at school age is an important policy for the short-term as well the long-term programs.

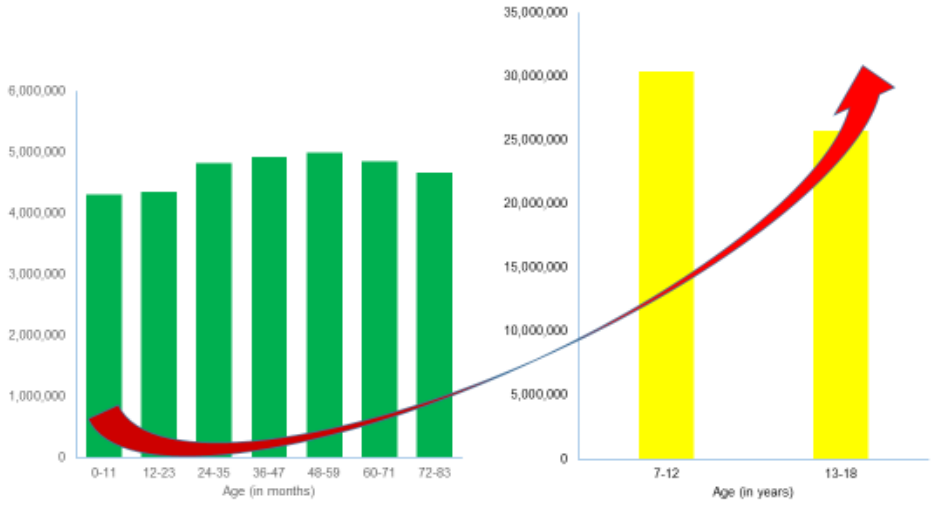
Responsibility for delivery of program to improve children health and nutrition should be shared among the central government, provinces, and districts with an important taken by district governments. Policy, strategy, standard and guidelines can be provided by the central government, the provinces are responsible for planning and quality assurance, while districts manage the resources and program implementation that addresses local needs.

Another issue that needs attention is a high risk group for school age girls, especially for those start entering the vulnerable child bearing years. For Indonesia, girls start their reproductive age at 10 years or younger. Girls are the key to health of future generations. It is important to ensure that girls are well nourished and healthy. From the previous paragraph, 20 to 30 percent of Indonesian girls are stunted and they will also need iron supplementation before their reproductive years begin. Schools can provide the program that can easily reach the girls in providing them health and nutrition knowledge.

School age children have many risks in terms of smoking, alcohol, reproductive and sexual health, including HIV/AIDS. They should have an access to information in order to be able to protect themselves from high risk behaviors. Schools are the places for reaching all Indonesian young children with the information and education that will help them understand for choosing healthier and safer lives. Schools are also the best media for promoting a balance diet that are consists of appropriate nutrition, food choices, and physical activity to maintain their normal weight. Promoting healthy life from young children is important and it is very effective as children will practices to alleviating the significant burden of obesity and non-communicable diseases.

With all the issues of Indonesian children, there are phases that need to be implemented using a continuum of care approach from birth to 18 years. Start with babies born up to 6 months which should have exclusive breast feeding, immunization, growth monitoring, and development plus stimulation. Continue from 6 months to 2 years with complementary feeding, immunization, growth monitoring and development plus stimulation. From 2 to 3 years continue with growth monitoring and stimulation, which is more frequent stimulation. From 3 to 6 years of age continue with daily activities for learning and playing to make them ready to go to school, for age 7 to 12 years and 13 to 18 years. (**Figure 34**).

Figure 34. Continuum of care: Life Cycle Approach



7. Conclusions and Recommendations

Indonesian children are facing serious problems on their health and nutrition. Nationally, 38.5 percent of children aged 0-6 years are sick during a mont, declining into 28 percent for age 7 years and 17 percent for age 18 years. They are also malnourished with the prevalence from about 60 percent for children under 5, and about 40 percent for the children above 5 years of age. There are variations which exist between provinces as well as districts.

The direct cause of malnutrition is associated with food intake, unbalanced diets of lower intake cumulatively, and also infections (associated with malnutrition). The occurrence of stunting in Indonesia could be because of hunger, combined with infectious diseases. This is made worse when immunization for young children does not cover all children as well as when growth monitoring and nutrition promotion are not carried out on a comprehensive basis.

It is important to understand that malnutrition, especially stunting is associated with poor cognitive development, causing late entry into school, decreasing years of schooling, and reducing productivity. Cognitive skills of children entering school were associated with early stunting suggesting that interventions preventing this problem should start from adolescent girls before getting married and pregnant.

With all the problems facing Indonesian children, school health and nutrition becomes a very important investment that can be implemented through *Usaha Kesehatan Sekolah* (*UKS*) which already exists. Revitalization of *UKS* as a program for school age children needs to be supported by local government with guidance from province and central governments. It is necessary to assess the capacity of human resources at various levels (district, province, and national levels) for implementation of school health and nutrition interventions.

Bettering health and nutrition among the school-age children is a strategic element in the effort to develop the community as a whole. The benefit from improving health and nutrition at school age will solve the intergenerational issue that Indonesia is facing right now for the purpose of better future development.

Appendix

Table A1. Number of Population 0-19 years by age groups, gender, and province, Population projection 2014 (in '000)

Province	Boys				Girls			
	0-4	5-9	10-14	15-19	0-4	5-9	10-14	15-19
Aceh	288.6	264.0	239.2	232.0	277.3	251.5	230.2	226.3
Sumatera Utara	802.3	759.9	704.7	672.5	774.0	721.9	673.4	648.9
Sumatera Barat	279.9	266.1	250.6	238.4	269.3	254.8	241.2	232.9
Riau	364.1	327.7	306.2	286.7	348.9	309.4	292.4	276.5
Jambi	165.2	162.7	157.5	152.1	158.8	158.0	154.4	147.2
Sumatera Selatan	412.6	394.3	376.5	362.7	395.8	373.0	358.4	346.1
Bengkulu	92.9	91.2	87.8	85.9	89.1	86.0	83.5	82.5
Lampung	409.6	389.2	369.0	365.1	392.6	368.3	349.4	341.7
Bangka Belitung	65.8	64.0	61.7	60.6	63.1	60.8	58.9	57.3
Kepulauan Riau	111.1	105.0	87.3	61.4	106.9	99.1	82.7	60.5
DKI Jakarta	480.3	424.8	367.6	350.9	462.8	398.0	353.4	372.0
Jawa Barat	2,235.9	2,134.5	2,106.4	2,103.4	2,137.0	2,019.7	2,010.6	2,022.2
Jawa Tengah	1,421.8	1,432.1	1,440.1	1,452.7	1,345.6	1,360.3	1,371.7	1,374.6
DI Yogyakarta	139.4	135.2	133.0	136.2	133.2	127.7	126.8	132.2
Jawa Timur	1,512.0	1,557.2	1,561.5	1,572.8	1,450.3	1,484.4	1,496.2	1,516.7
Banten	623.9	571.8	532.5	541.4	598.5	540.8	505.0	513.5
Bali	167.9	181.9	173.6	157.7	160.4	170.4	163.9	151.3
Nusa Tenggara Barat	259.1	247.7	232.1	224.2	249.4	235.9	222.0	217.5
Nusa Tenggara Timur	315.0	303.9	288.5	262.9	304.8	297.1	275.1	248.4
Kalimantan Barat	253.7	237.5	227.9	222.7	243.2	225.8	218.3	214.6
Kalimantan Tengah	126.2	120.7	114.6	112.0	120.9	114.0	109.7	107.1
Kalimantan Selatan	209.6	193.5	178.7	171.1	201.9	182.6	169.4	162.5
Kalimantan Timur	212.0	195.6	185.8	176.1	202.1	183.3	175.4	165.9
Sulawesi Utara	107.7	105.8	105.6	103.0	102.2	101.1	99.4	97.2
Sulawesi Tengah	152.4	136.9	134.0	133.8	147.1	128.4	126.6	127.4
Sulawesi Selatan	427.5	414.7	412.1	411.3	410.1	396.2	392.4	397.8
Sulawesi Tenggara	150.7	145.5	130.0	120.9	143.8	137.3	123.4	115.7
Gorontalo	55.7	54.3	54.3	54.4	53.5	51.3	52.0	53.7
Sulawesi Barat	72.8	68.2	66.2	63.8	70.1	64.2	62.9	61.1
Maluku	100.9	94.3	90.8	86.0	96.9	88.3	85.7	80.1
Maluku Utara	69.9	66.9	61.4	56.2	67.0	64.0	58.5	52.2
Papua Barat	47.9	46.0	43.6	41.1	46.5	43.0	41.1	38.2
Papua	167.0	164.2	167.5	165.8	162.3	155.6	147.9	145.1
Indonesia	**12,301.4**	**11,857.3**	**11,448.3**	**11,237.8**	**11,785.4**	**11,252.2**	**10,911.9**	**10,786.9**

Table A2. Proportion of children 0-6 years with birth certificate situation by gender and province, *Susenas* 2012

Province	Boys				Girls			
	Yes, able to show it	Yes, unable to show it	Don't have	Don't know	Yes, able to show it	Yes, unable to show it	Don't have	Don't know
Aceh	45.9	19.5	34.0	0.6	45.6	20.0	34.0	0.4
Sumatera Utara	31.4	9.1	58.9	0.6	31.1	9.9	58.4	0.6
Sumatera Barat	48.0	12.1	38.5	1.4	45.5	12.0	41.5	0.9
Riau	50.1	10.1	39.3	0.5	49.5	10.0	39.8	0.6
Jambi	61.8	14.9	22.4	0.8	61.0	14.1	24.0	0.9
Sumatera Selatan	49.3	20.7	29.6	0.4	47.7	17.3	34.3	0.7
Bengkulu	54.6	19.7	25.1	0.7	53.2	17.9	27.6	1.2
Lampung	43.5	18.1	37.6	0.8	46.9	17.4	34.7	1.0
Bangka Belitung	69.1	14.2	16.4	0.3	73.5	12.0	14.4	0.1
Kepulauan Riau	69.6	21.7	8.6	0.1	73.8	16.0	10.1	0.1
DKI Jakarta	59.5	35.1	5.2	0.2	60.2	34.1	5.7	0.0
Jawa Barat	47.9	19.2	32.5	0.3	48.7	18.8	32.1	0.5
Jawa Tengah	68.1	14.5	17.0	0.3	68.8	14.1	16.7	0.4
DI Yogyakarta	73.8	20.9	5.1	0.2	74.1	19.3	6.6	0.0
Jawa Timur	62.1	15.1	22.5	0.3	62.4	14.9	22.5	0.2
Banten	47.8	19.5	32.3	0.4	47.3	20.8	30.8	1.1
Bali	42.8	20.5	36.2	0.6	39.4	21.0	39.4	0.2
Nusa Tenggara Barat	31.6	13.0	54.2	1.3	30.6	15.2	53.7	0.5
Nusa Tenggara Timur	25.2	12.5	61.4	0.9	25.5	12.4	60.9	1.2
Kalimantan Barat	53.7	15.6	29.8	1.0	51.8	15.1	32.2	0.9
Kalimantan Tengah	52.4	13.8	33.3	0.5	49.7	16.4	33.2	0.7
Kalimantan Selatan	60.6	16.9	22.3	0.3	63.7	15.7	20.4	0.2
Kalimantan Timur	57.1	27.0	15.5	0.3	54.4	28.3	16.8	0.5
Sulawesi Utara	43.4	18.1	37.3	1.2	42.8	19.6	36.8	0.7
Sulawesi Tengah	27.3	16.1	55.8	0.8	24.8	17.5	57.0	0.7
Sulawesi Selatan	44.8	20.3	34.4	0.5	45.1	21.2	33.1	0.6
Sulawesi Tenggara	37.3	11.5	50.8	0.4	36.5	10.8	51.8	0.9
Gorontalo	36.5	16.2	46.8	0.5	36.9	18.6	43.3	1.2
Sulawesi Barat	36.8	18.0	44.3	0.9	39.5	18.3	41.2	1.1
Maluku	30.5	10.3	58.8	0.3	27.2	11.1	61.2	0.6
Maluku Utara	28.7	14.8	56.0	0.5	31.4	15.8	52.4	0.4
Papua Barat	28.0	23.3	48.0	0.6	24.2	25.4	49.4	0.9
Papua	16.7	14.5	63.7	5.2	19.7	14.2	61.2	4.9
Indonesia	50.4	17.1	32.0	0.5	50.5	16.9	32.0	0.6

Table A3. Pre-school education for children 0-6 years by gender and province, *Susenas* 2012

Province	Boys			Girls		
	Yes, not anymore	Yes, currently enrolled	No	Yes, not anymore	Yes, currently enrolled	No
Aceh	7.9	10.3	81.9	8.1	10.9	81.0
Sumatera Utara	7.0	9.7	83.2	6.3	11.4	82.4
Sumatera Barat	7.2	12.1	80.7	6.9	12.2	80.9
Riau	6.6	10.1	83.3	5.9	10.3	83.8
Jambi	9.6	11.6	78.7	9.6	13.1	77.2
Sumatera Selatan	5.1	8.5	86.3	5.1	8.5	86.4
Bengkulu	6.6	10.3	83.1	5.7	12.2	82.2
Lampung	6.7	11.2	82.1	7.5	14.6	77.9
Bangka Belitung	7.7	14.9	77.3	7.5	16.2	76.3
Kepulauan Riau	8.3	11.6	80.1	5.4	14.4	80.2
DKI Jakarta	5.0	22.2	72.8	5.9	21.4	72.7
Jawa Barat	6.3	14.6	79.1	7.7	15.5	76.7
Jawa Tengah	9.7	20.6	69.7	11.0	21.7	67.3
DI Yogyakarta	10.5	38.4	51.2	10.9	37.8	51.3
Jawa Timur	8.6	25.8	65.6	9.2	25.6	65.2
Banten	7.7	12.9	79.5	7.4	13.3	79.4
Bali	6.8	15.7	77.5	5.8	16.3	77.9
Nusa Tenggara Barat	4.6	14.1	81.3	6.3	14.5	79.3
Nusa Tenggara Timur	5.6	11.7	82.7	7.0	12.0	81.0
Kalimantan Barat	4.1	7.1	88.8	5.1	7.0	87.9
Kalimantan Tengah	6.7	11.9	81.4	7.8	13.2	79.0
Kalimantan Selatan	7.1	19.9	73.1	9.2	21.2	69.6
Kalimantan Timur	8.0	14.8	77.2	8.2	14.2	77.6
Sulawesi Utara	13.0	12.0	75.0	13.0	14.3	72.6
Sulawesi Tengah	8.6	15.2	76.2	8.1	16.3	75.5
Sulawesi Selatan	7.6	10.7	81.6	8.0	13.5	78.5
Sulawesi Tenggara	8.5	10.3	81.2	8.8	12.0	79.1
Gorontalo	10.4	22.6	67.0	8.6	30.6	60.7
Sulawesi Barat	7.0	13.9	79.0	7.4	16.7	75.9
Maluku	7.3	10.3	82.4	5.5	11.2	83.3
Maluku Utara	5.7	9.5	84.7	4.9	10.1	85.0
Papua Barat	4.9	11.5	83.6	3.9	10.9	85.2
Papua	3.0	3.7	93.3	3.1	4.8	92.1
Indonesia	7.3	15.7	77.0	7.9	16.5	75.6

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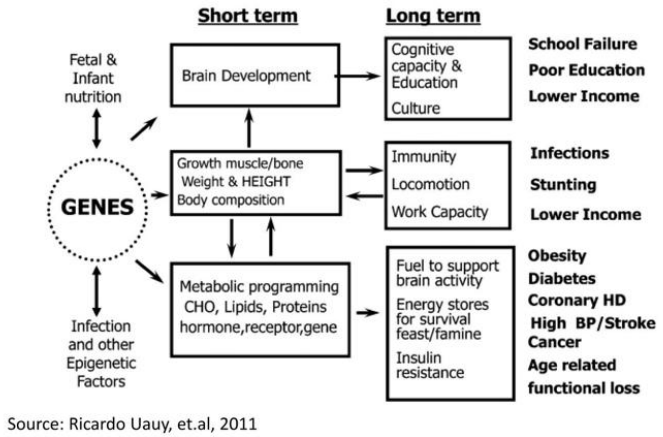
Attachment:
Presentation on Rapid Assessment on Student Health and Nutrition

Rapid Assessment on Student Health and Nutrition

TA-7554 INO: ACDP 041

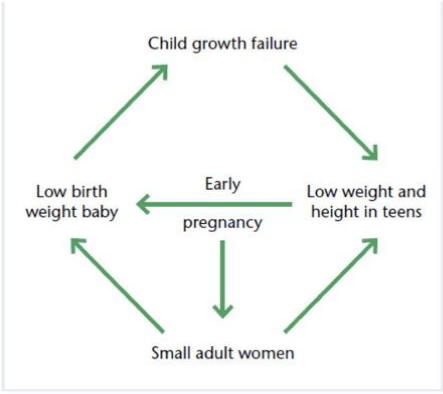
Atmarita

Conceptual framework



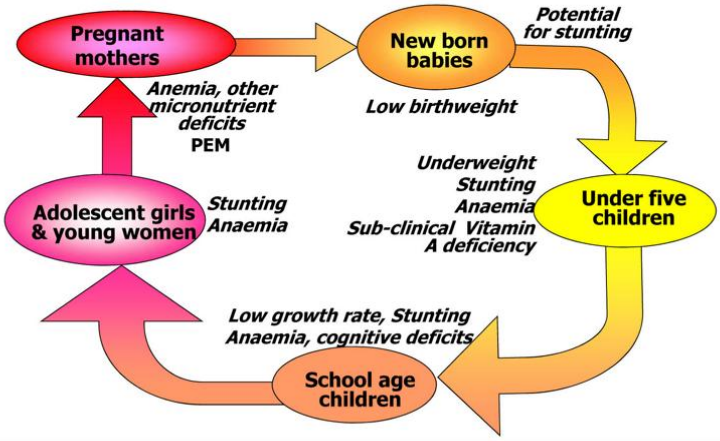
Source: Ricardo Uauy, et.al, 2011

Intergenerational of Growth Failure

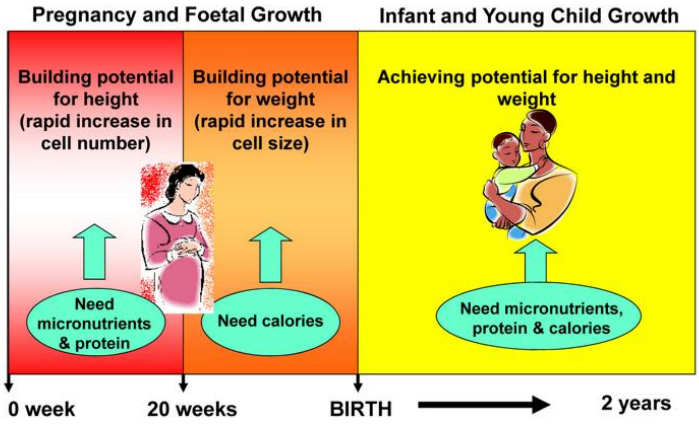


Source: ACC/SCN (1992).

Nutrition problems throughout the Life Cycle



Critical Periods of Growth



Barker's hypothesis

The fetal origins of adult disease (FOAD) hypothesis ……..risk factors from intrauterine environmental exposures affect the fetus' development during sensitive periods, and increases the risk of specific diseases in adult life….

Assessment based on secondary data of:

- Population Census 2010
- Susenas 2012
- Riskesdas 2007
- Riskesdas 2010
- Riskesdas 2013

School-aged children in Indonesia

- Early child development (ECD) program:
  - 0-6 years:
    →0-11 month; 12-23 months; 24-35 months;→Posyandu, PAUD, TPA, KB
    36-47 months; 48-59 months; 60-71 months; 72-83 months
    →Posyandu, PAUD, TPA, KB, TK
- School-aged children
  - 7-12 years
    →7-9 years; 10-12 years
  - 13-15 years
  - 16-18 years

Number of Children 0-19 years: 2000-2035*)

	2000	2005	2010	2015	2020	2025	2030	2035
Male	42,660.50	42,251.80	45,825.00	47,044.00	47,595.90	47,596.40	46,772.00	45,390.80
0-4	10,153.40	10,364.40	12,048.70	12,273.40	11,980.20	11,594.60	11,196.90	10,868.70
5-9	11,117.10	10,082.30	11,542.20	11,974.40	12,208.00	11,922.60	11,542.60	11,148.70
10-14	10,780.60	11,077.80	11,333.60	11,507.20	11,942.30	12,177.90	11,894.90	11,516.80
15-19	10,609.40	10,727.30	10,900.50	11,289.00	11,465.40	11,901.30	12,137.60	11,856.60
Female	41,485.80	40,794.30	43,871.10	44,908.80	45,510.30	45,615.00	44,954.90	43,588.80
0-4	9,798.60	9,985.10	11,405.70	11,792.10	11,495.60	11,116.40	10,729.20	10,411.10
5-9	10,749.30	9,747.80	10,975.80	11,356.00	11,747.60	11,455.90	11,080.30	10,695.80
10-14	10,370.00	10,724.00	10,832.00	10,954.30	11,336.30	11,729.10	11,438.90	11,064.50
15-19	10,567.90	10,337.40	10,657.60	10,806.40	10,930.80	11,313.60	11,706.50	11,417.40

*) Source: 1) Indonesia Population Projection 2000-2025;
2) Indonesia Population Projection 2010-2035

Number of children 0-19 years by gender 2000-2035

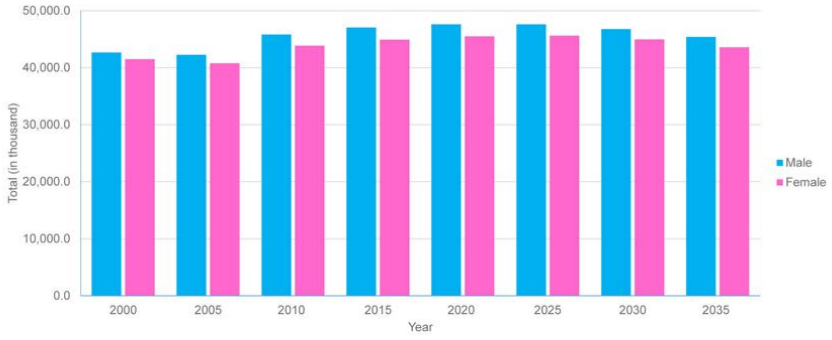


Table 1. Number of Male and Female Population 0-19 years by age groups and province, projection 2014

Provinsi	Male				Female			
	0-4	5-9	10-14	15-19	0-4	5-9	10-14	15-19
Aceh	288.6	264.0	239.2	232.0	277.3	251.5	230.2	226.3
Sumatera Utara	802.3	759.9	704.7	672.5	774.0	721.9	673.4	648.9
Sumatera Barat	279.9	266.1	250.6	238.4	269.3	254.8	241.2	232.9
Riau	364.1	327.7	306.2	286.7	348.9	309.4	292.4	276.5
Jambi	165.2	162.7	157.5	152.1	158.8	158.0	154.4	147.2
Sumatera Selatan	412.6	394.3	376.5	362.7	395.8	373.0	358.4	346.1
Bengkulu	92.9	91.2	87.8	85.9	89.1	86.0	83.5	82.5
Lampung	409.6	389.2	369.0	365.1	392.6	368.3	349.4	341.7
Bangka Belitung	65.8	64.0	61.7	60.6	63.1	60.8	58.9	57.3
Kepulauan Riau	111.1	105.0	87.3	61.4	106.9	99.1	82.7	60.5
DKI Jakarta	480.3	424.8	367.6	350.9	462.8	398.0	353.4	372.0
Jawa Barat	2,235.9	2,134.5	2,106.4	2,103.4	2,137.0	2,019.7	2,010.6	2,022.2
Jawa Tengah	1,421.8	1,432.1	1,440.1	1,452.7	1,345.6	1,360.3	1,371.7	1,374.6
DI Yogyakarta	139.4	135.2	133.0	136.2	133.2	127.7	126.8	132.2
Jawa Timur	1,512.0	1,557.2	1,561.5	1,572.8	1,450.3	1,484.4	1,496.2	1,516.7
Banten	623.9	571.8	532.5	541.4	598.5	540.8	505.0	513.5
Bali	167.9	181.9	173.6	157.7	160.4	170.4	163.9	151.3
Nusa Tenggara Barat	259.1	247.7	232.1	224.2	249.4	235.9	222.0	217.5
Nusa Tenggara Timur	315.0	303.9	288.5	262.9	304.8	297.1	275.1	248.4
Kalimantan Barat	253.7	237.5	227.9	222.7	243.2	225.8	218.3	214.6
Kalimantan Tengah	126.2	120.7	114.6	112.0	120.9	114.0	109.7	107.1
Kalimantan Selatan	209.6	193.5	178.7	171.1	201.9	182.6	169.4	162.5
Kalimantan Timur	212.0	195.6	185.8	176.1	202.1	183.3	175.4	165.9
Sulawesi Utara	107.7	105.8	105.6	103.0	102.2	101.1	99.4	97.2
Sulawesi Tengah	152.4	136.9	134.0	133.8	147.1	128.4	126.6	127.4
Sulawesi Selatan	427.5	414.7	412.1	411.3	410.1	396.2	392.4	397.8
Sulawesi Tenggara	150.7	145.5	130.0	120.9	143.8	137.3	123.4	115.7
Gorontalo	55.7	54.3	54.3	54.4	53.5	51.3	52.0	53.7
Sulawesi Barat	72.8	68.2	66.2	63.8	70.1	64.2	62.9	61.1
Maluku	100.9	94.3	90.8	86.0	96.9	88.3	85.7	80.1
Maluku Utara	69.9	66.9	61.4	56.2	67.0	64.0	58.5	52.2
Papua Barat	47.9	46.0	43.6	41.1	46.5	43.0	41.1	38.2
Papua	167.0	164.2	167.5	165.8	162.3	155.6	147.9	145.1
Indonesia	12,301.4	11,857.3	11,448.3	11,237.8	11,785.4	11,252.2	10,911.9	10,786.9

Children 0-6 years

Age (in months)	SP 2010		Susenas 2012	
	Boys	Girls	Boys	Girls
0-11	2,242,180	2,118,580	2,192,636	2,110,378
12-23	2,275,080	2,154,980	2,261,339	2,095,526
24-35	2,334,400	2,199,790	2,460,660	2,365,116
36-47	2,368,230	2,244,270	2,554,596	2,362,844
48-59	2,364,920	2,228,740	2,535,846	2,455,395
60-71	2,305,970	2,167,720	2,489,186	2,357,494
72-83	2,378,940	2,223,970	2,429,892	2,238,949
Total	16,269,720	15,338,050	16,924,155	15,985,702
Boys + Girls	31,607,770		32,909,857	

Birth certificate children 0-6 years by gender – Susenas 2012

Age (in months)	Boys				Girls			
	Yes, able to show it	Yes, unable to show it	Don't have	Don't know	Yes, able to show it	Yes, unable to show it	Don't have	Don't know
0-11	38.1	14.1	47.3	0.6	39.0	13.9	46.4	0.7
12-23	50.1	15.8	33.7	0.4	48.6	15.8	35.1	0.6
24-35	48.9	17.8	32.6	0.7	51.1	16.5	31.7	0.6
36-47	51.8	16.6	31.1	0.5	52.0	17.5	29.8	0.7
48-59	53.0	17.9	28.5	0.5	52.1	17.6	29.7	0.6
60-71	54.4	18.0	27.0	0.6	54.5	18.0	27.0	0.6
72-83	55.0	18.7	25.8	0.5	55.3	18.4	25.9	0.4
Total	50.4	17.1	32.0	0.5	50.5	16.9	32.0	0.6

Pre-School Education by age groups and gender, Susenas 2012

Age (in months)	Boys			Girls		
	Yes, not anymore	Yes, currently enrolled	No	Yes, not anymore	Yes, currently enrolled	No
0-11	0.2	0.2	99.7	0.3	0.2	99.5
12-23	0.3	0.7	99.0	0.3	0.5	99.2
24-35	0.7	1.9	97.4	0.7	2.6	96.7
36-47	2.1	9.0	88.8	2.6	10.4	87.0
48-59	5.3	24.8	69.9	5.4	27.6	67.0
60-71	11.0	44.7	44.3	12.2	46.4	41.4
72-83	30.8	25.1	44.1	33.4	24.3	42.3
Total	7.3	15.7	77.0	7.9	16.5	75.6

Type of Pre-school attended by age groups and gender, Susenas 2012

Age (in months)	Boys					Girls				
	TK/BA/RA	Play Group	TPA	Pos PAUD*)	Other Type of PAUD**)	TK/BA/RA	Play Group	TPA	Pos PAUD*)	Other Type of PAUD**)
0-11	0.0	0.0	7.3	0.4	0.3	0.0	0.0	14.0	0.3	0.5
12-23	0.0	10.5	8.3	0.9	0.9	0.0	4.9	7.5	0.7	0.8
24-35	0.0	11.6	10.6	4.9	4.6	0.0	18.1	20.9	6.4	3.5
36-47	1.6	34.6	10.0	21.3	19.3	2.0	30.1	9.8	21.6	19.5
48-59	13.7	43.3	15.0	36.4	32.1	14.5	46.9	12.5	35.7	33.8
60-71	41.5	0.0	25.9	20.9	26.0	41.9	0.0	21.6	22.6	23.4
72-83	43.2	0.0	22.8	15.3	16.8	41.6	0.0	13.7	12.7	18.5

*) Pendidikan Anak Usia Dini; Integrated PAUD with Pos BKB /Posyandu
**) Private PAUD

Proportion of School participation by age and gender, Susenas 2012

Age (in years)	Boys			Girls		
	Never/Have not attended school	Currently attended School	Not attending school anymore	Never/Have not attended school	Currently attended School	Not attending school anymore
5	95.9	4.1	0.0	94.5	5.5	0.0
6	51.5	48.5	0.0	48.1	51.9	0.0
7	4.4	95.3	0.3	3.4	96.4	0.1
8	1.1	98.7	0.2	1.0	98.8	0.2
9	1.0	98.7	0.3	0.7	99.0	0.3
10	0.8	98.8	0.4	0.8	98.9	0.3
11	0.6	98.4	1.0	0.6	98.7	0.7
12	0.6	96.8	2.6	0.7	97.2	2.2
13	0.8	94.2	5.1	0.8	95.6	3.6
14	0.8	89.2	10.1	0.7	92.0	7.3
15	0.8	82.2	17.0	0.8	84.5	14.6
16	0.7	78.0	21.3	0.6	80.7	18.7
17	0.9	63.2	35.9	0.9	63.3	35.8
18	0.9	38.6	60.5	0.9	37.0	62.0

Proportion of pre-school children sick*) last month and average days of affected by age groups and gender, Susenas 2012

Age (in months)	Health complaints last month			Average days affected
	Boys	Girls	Boys + Girls	
0-11	38.5	35.7	37.1	4.2
12-23	49.0	49.6	49.3	4.1
24-35	43.9	44.0	44.0	4.0
36-47	39.3	38.8	39.0	3.8
48-59	37.1	36.4	36.8	3.8
60-71	33.5	33.2	33.4	3.8
72-83	30.8	30.6	30.7	3.6

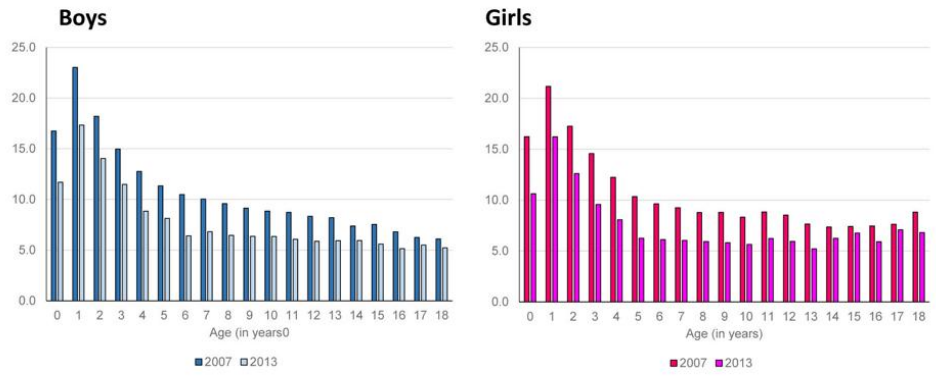
*) Whether in the last one month have complaints such as fever, cough, runny nose, asthma, diarrhea, recurrent headache, toothache, or others?

Proportion of school age children sick*) last month and average days of affected by age and gender, Susenas 2012

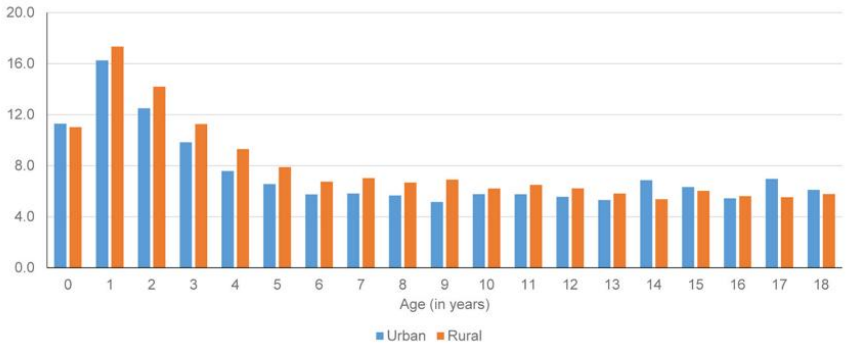
Age (in years)	Health complaints last month			Average days affected
	Boys	Girls	Boys + grils	
7	27.7	28.2	28.0	3.57
8	25.2	24.9	25.0	3.61
9	23.9	24.2	24.1	3.70
10	23.3	22.4	22.9	3.77
11	20.8	20.9	20.9	3.61
12	18.9	19.0	19.0	3.81
13	18.3	18.7	18.5	4.01
14	17.2	18.0	17.6	3.75
15	16.2	17.7	17.0	4.23
16	16.9	17.9	17.4	3.98
17	15.1	18.0	16.5	4.07
18	15.1	19.1	17.1	4.53

*) Whether in the last one month have complaints such as fever, cough, runny nose, asthma, diarrhea, recurrent headache, toothache, or others?

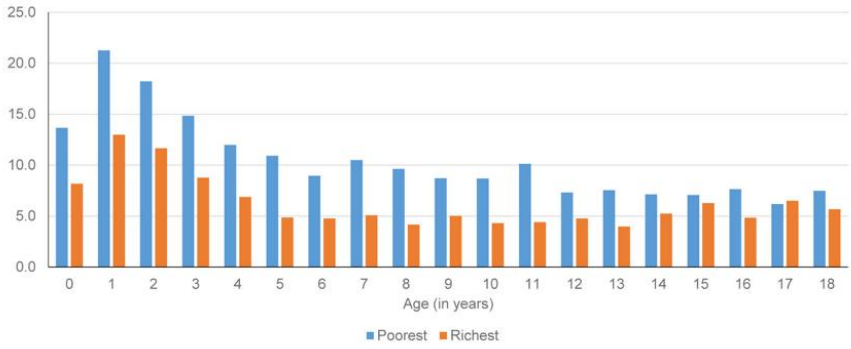
Proportion of children 0-18 years having diarrhea last month, Riskesdas 2007-2013



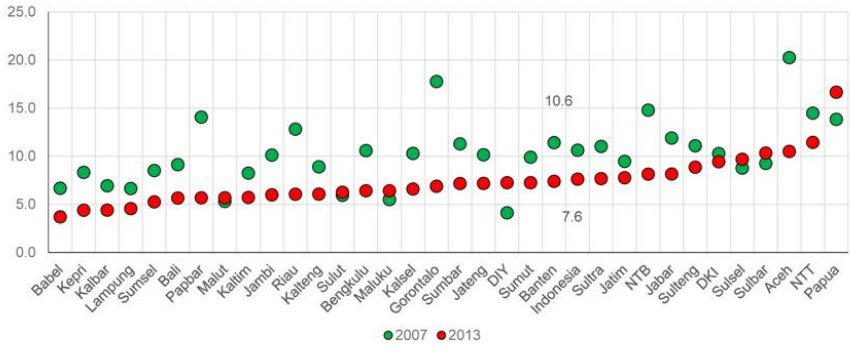
Proportion of children 0-18 years having diarrhea last month by residence, Riskesdas 2013



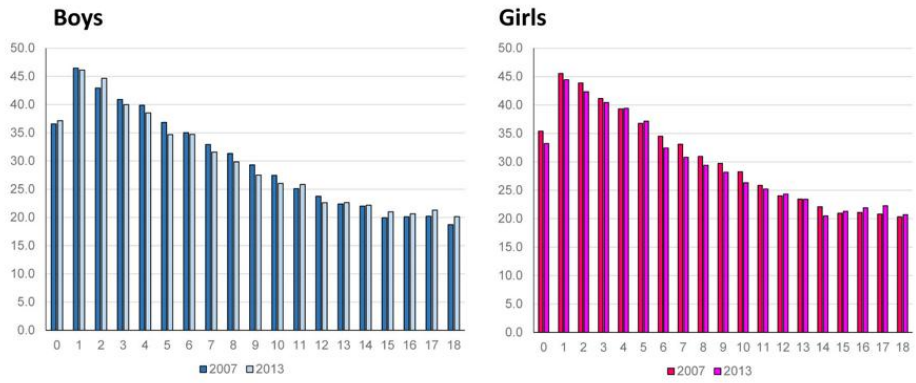
Proportion of children 0-18 years having diarrhea last month wealth quintiles, Riskesdas 2007-2013



Proportion of children 0-18 years having diarrhea last month by province, Riskesdas 2007-2013

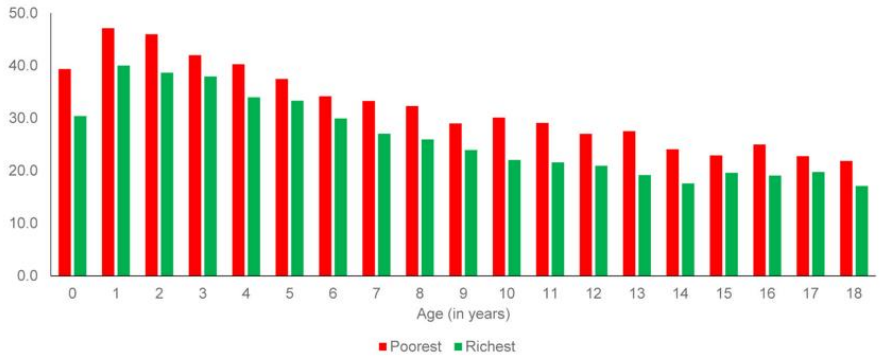


Proportion of children 0-18 years having ARI last month, Riskesdas 2007-2013

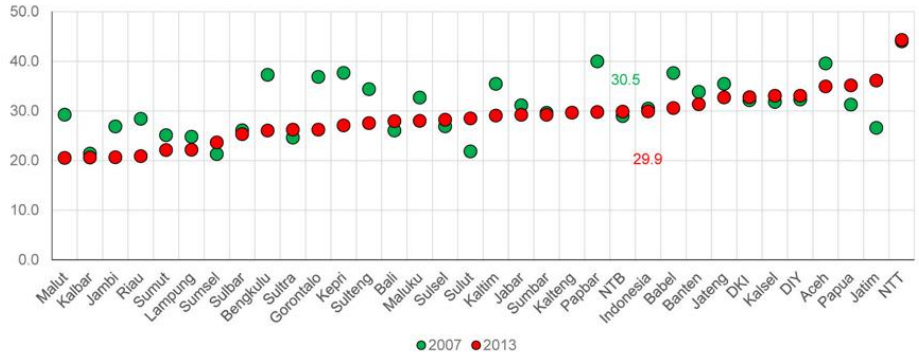


Proportion of children 0-18 years having ARI last month by Residence, Riskesdas 2013

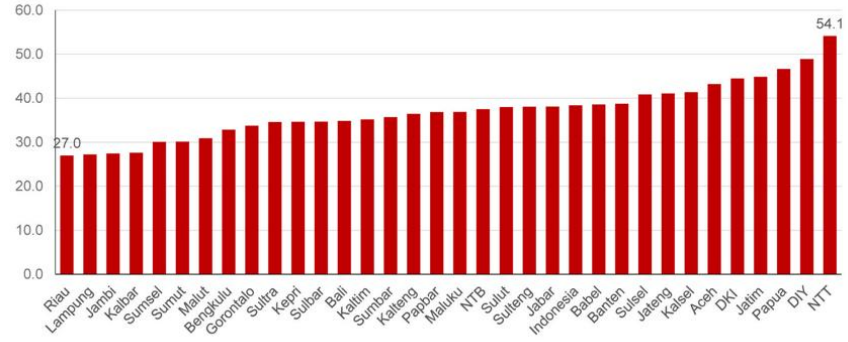
Proportion of children 0-18 years having ARI last month by wealth quintiles, Riskesdas 2013



Proportion of children 0-18 years having ARI last month by province, Riskesdas 2007-2013



Proportion of children 0-18 years 'sick' *) last month by province, Riskesdas 2013

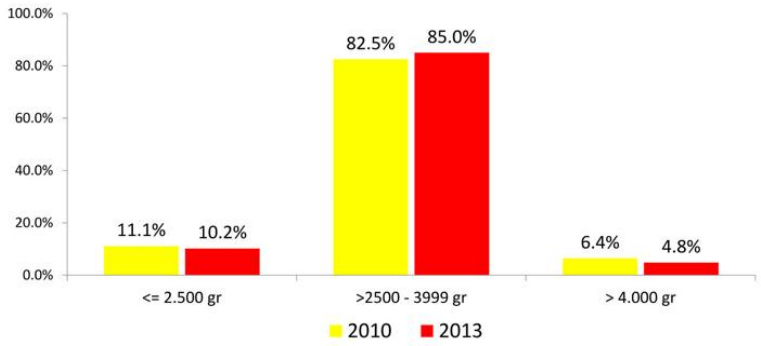


*) Composite of ARI, Diarrhea, Pneumonia, coughing, pulmonary tuberculosis → last month ever suffered and diagnosed from ARI, diarrhea, pneumonia, coughing, pulmonary tuberculosis

Proportion of children 0-18 years 'sick' *) last month by characteristics, Riskesdas 2013

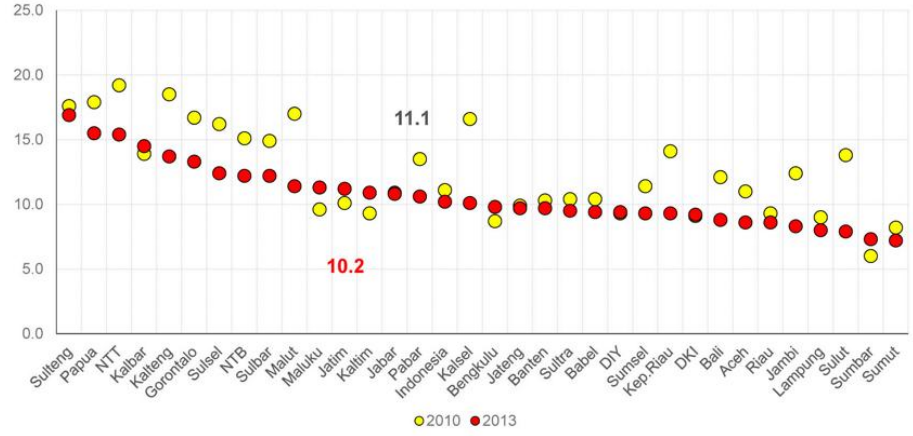
Age (in years)	Residence		Wealth Quintiles					Gender	
	Urban	Rural	Poorest	Poor	Middle	Rich	Richest	Boys	Girls
0	42.1	42.6	46.5	42.5	44.4	43.0	36.5	44.4	40.2
1	54.5	55.3	57.6	56.5	55.0	56.7	48.8	55.6	54.2
2	52.6	52.8	56.5	54.0	53.7	51.8	48.7	53.8	51.6
3	49.0	48.1	51.1	49.6	48.8	48.3	45.7	48.8	48.4
4	46.8	47.5	49.0	47.8	50.9	45.9	42.7	47.2	47.1
5	44.1	43.7	46.8	42.7	45.5	44.1	41.0	43.1	44.8
6	41.8	40.5	41.8	41.8	42.6	42.2	37.3	42.3	39.8
7	39.2	39.4	41.9	40.3	40.1	40.1	34.6	39.9	38.6
8	38.3	36.8	40.6	36.6	38.5	38.1	34.0	38.0	37.0
9	35.0	36.4	37.7	38.0	38.0	34.0	31.6	35.7	35.8
10	35.2	33.5	38.6	33.8	36.1	33.4	30.7	33.7	35.0
11	34.3	34.2	39.4	34.7	35.3	33.7	29.2	34.3	34.1
12	32.4	31.8	36.1	32.2	33.1	31.1	28.8	30.9	33.3
13	30.9	31.6	37.3	31.2	31.3	30.0	27.3	31.1	31.4
14	31.9	29.8	33.5	30.6	32.9	31.1	26.3	31.8	29.7
15	30.9	30.2	32.7	32.2	30.4	28.8	29.5	30.6	30.5
16	31.2	29.4	34.1	30.1	29.0	31.4	28.3	29.8	30.9
17	31.9	30.4	32.8	30.6	33.1	30.9	28.8	30.7	31.6
18	30.8	28.5	30.4	30.2	31.6	30.6	25.9	29.2	30.3

Proportion babies with birth weight: 2010-2013*)

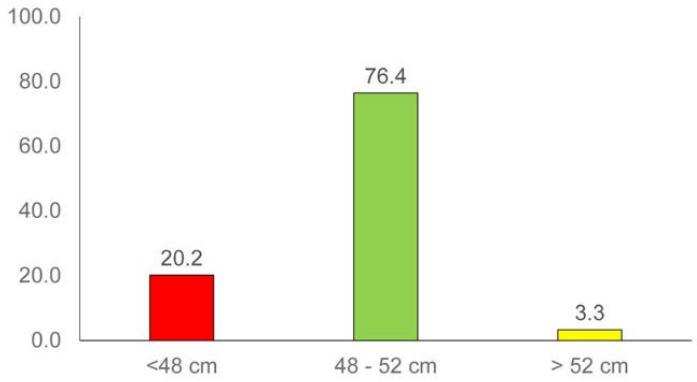


*) According to 52,6% samples of children under 5 who have health record

Proportion of Low Birth Weight (<2500 gr) babies by province: Riskesdas 2010-2013

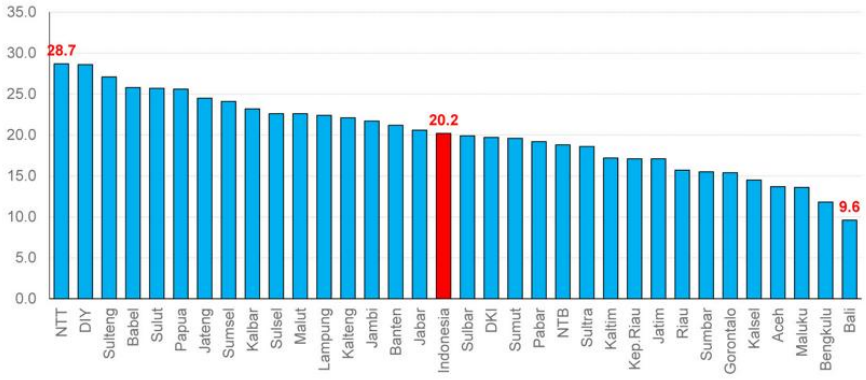


Proportion babies with birth length: Riskesdas 2013*)



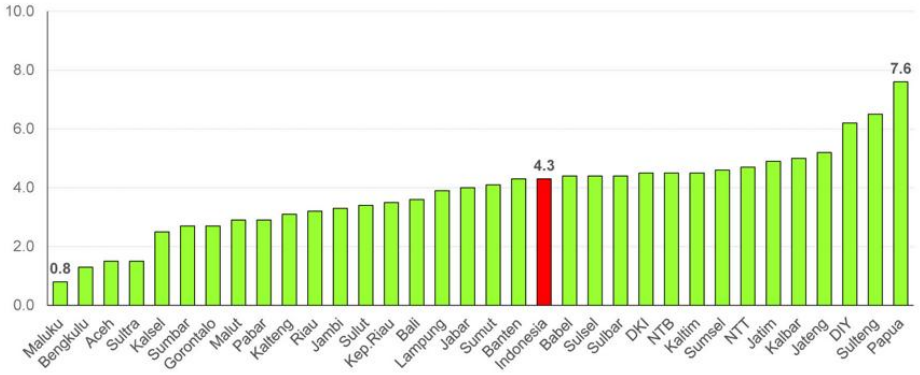
*) According to 45% samples children under five who have health records

Proportion babies with birth length < 48 cm by province, Riskesdas 2013*)



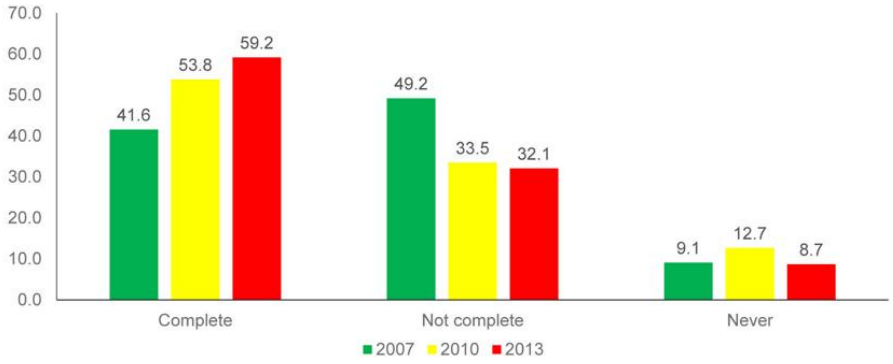
*) According to 45% samples children under 5 who have health records

Proportion of babies with birth weight <2500 gr & birth length <48 cm, Riskesdas 2013*)

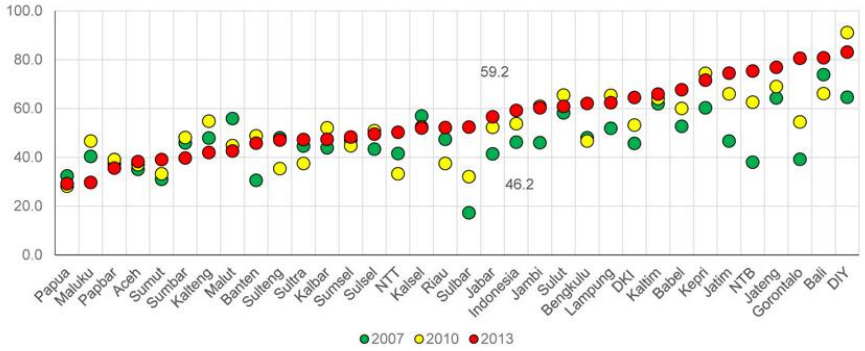


*) According to 45% samples children under 5 who have health records

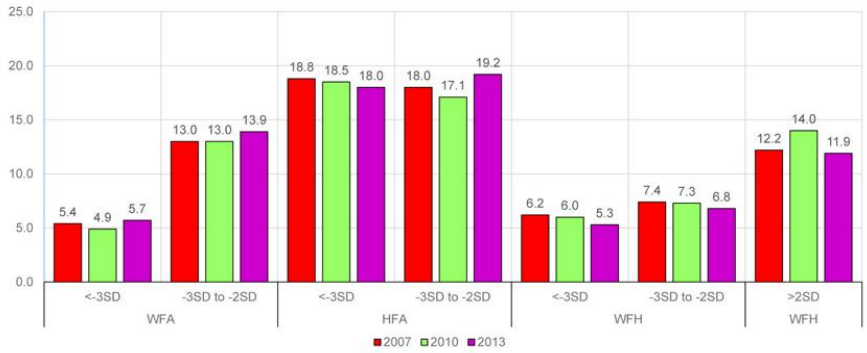
Proportion of children 12-23 months with basic immunization status: Riskesdas 2007-2013



Proportion of children 12-23 months with complete basic immunization by province, Riskesdas 2007-2013



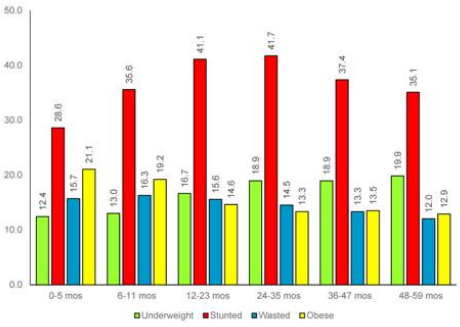
Nutritional Status for children 0-59 months: Riskesdas 2007-2010-2013



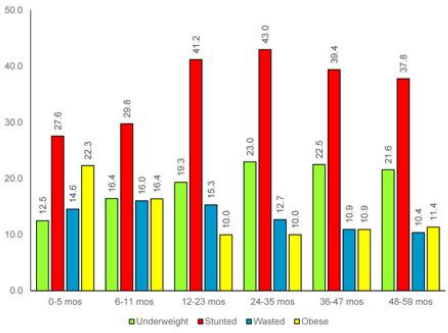
Note:
WFA (Weight for Age): <-3SD (severe underweight); -3 SD to -2 SD (moderate underweight)
HFA (Height for Age): <-3SD (severe stunted); -3 SD to -2 SD (stunted)
WFH (Weight for Height): <-3SD (severe wasted); -3 SD to -2 SD (wasted); >2SD (overweight)

Nutritional Status for Boys by age groups

Riskesdas 2007

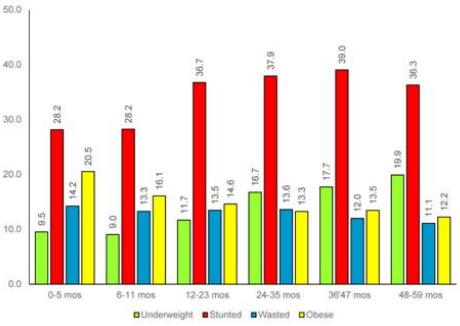


Riskesdas 2013

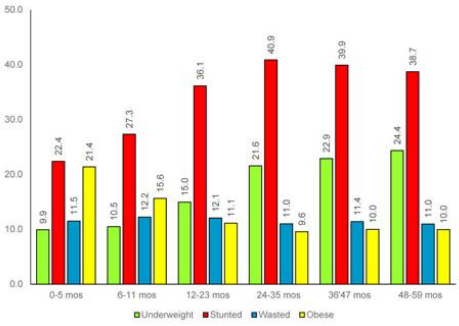


Nutritional Status for Girls by age groups

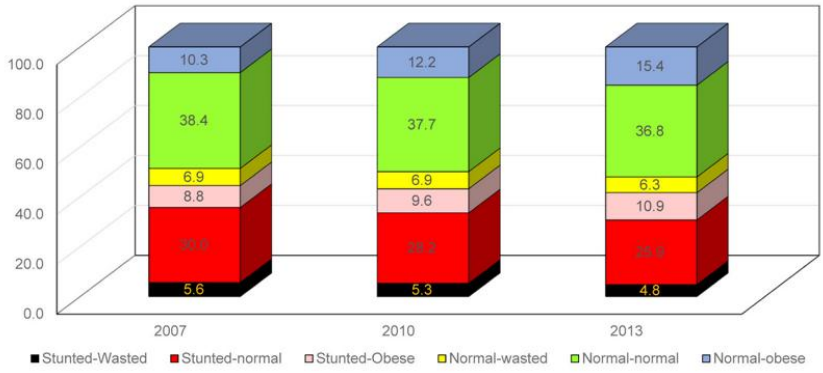
Riskesdas 2007



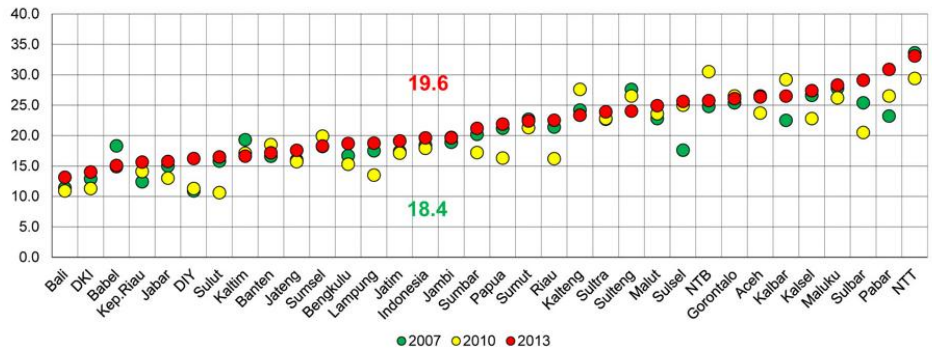
Riskesdas 2013



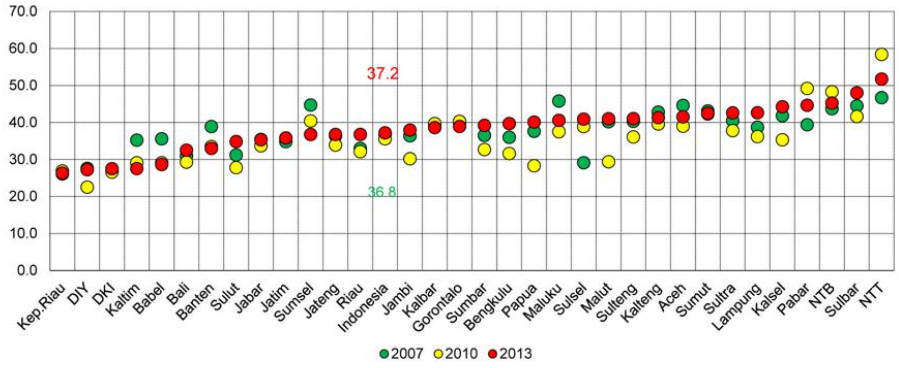
Indonesian Children 0-59 months by nutritional status (composite of weight and height): 2007-2013



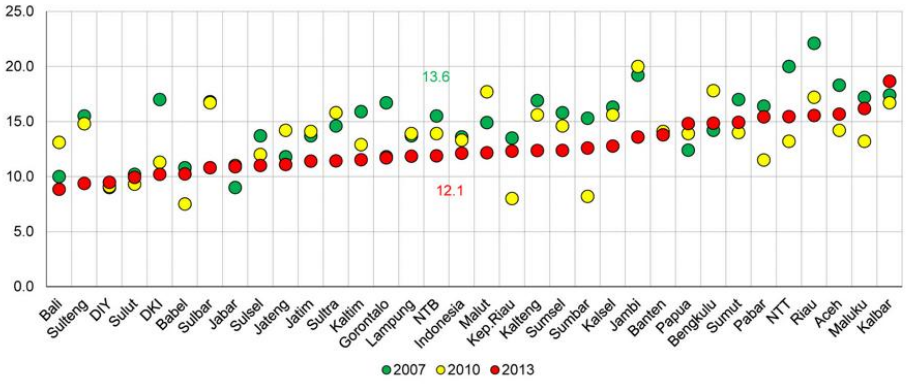
Prevalence of underweight (WFA<-2SD) for children 0-59 months by province: 2007-2013



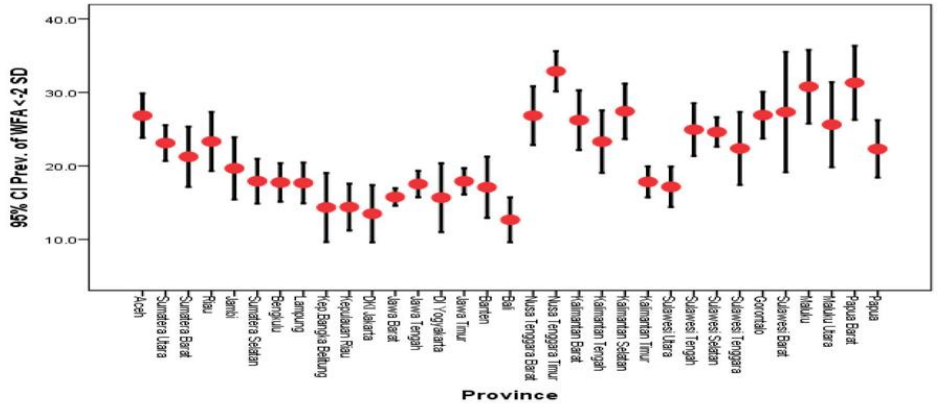
Prevalence of stunted (HFA<-2SD) for children 0-59 months by province: 2007-2013



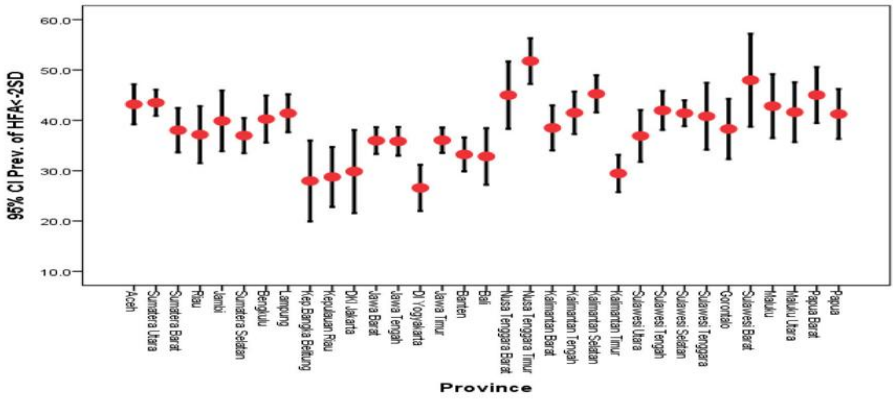
Prevalence of wasted (WFH<-2SD) for children 0-59 months by province: 2007-2013



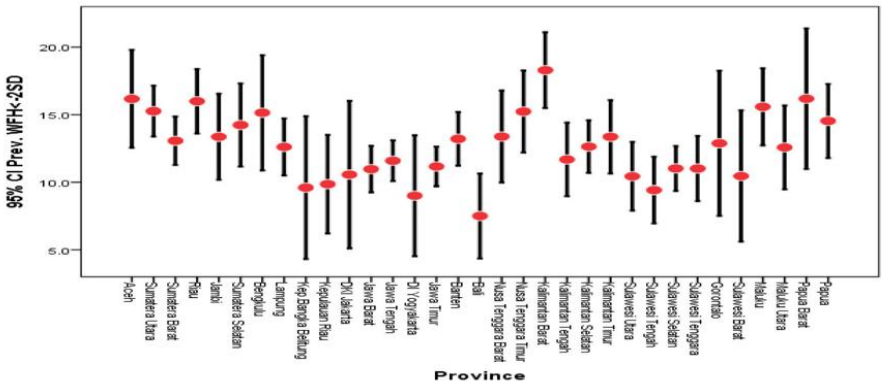
Prevalence of underweight (WFA<-2SD) for children 0-59 months according to district variation by province, Riskesdas 2013



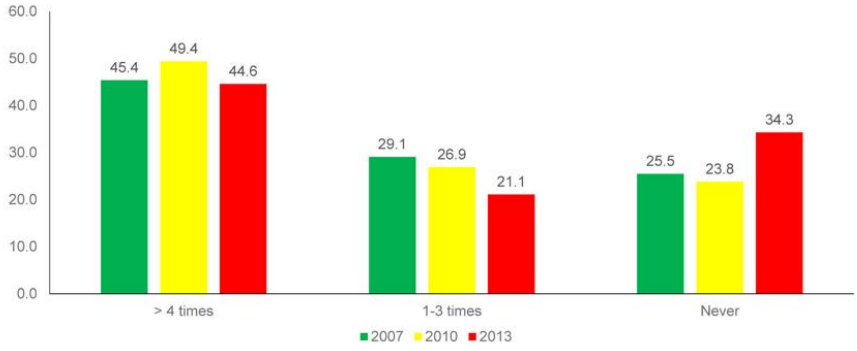
Prevalence of stunted (HFA<-2SD) for children 0-59 months according to district variation by province, Riskesdas 2013



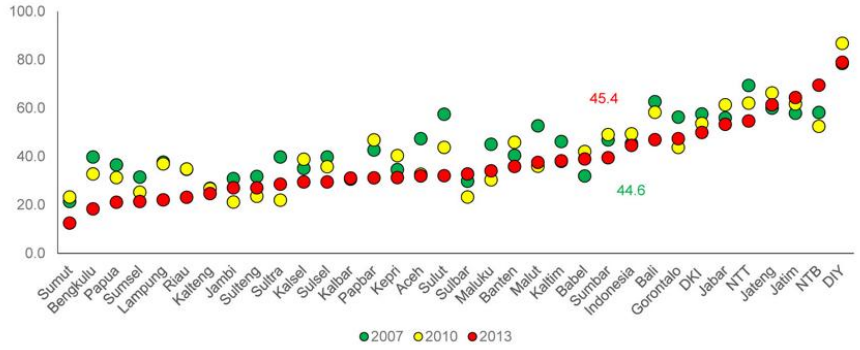
Prevalence of wasted (WFH<-2SD) for children 0-59 months according to district variation by province, Riskesdas 2013



Proportion of children under five years with growth monitoring within the last 6 months, 2007-2013

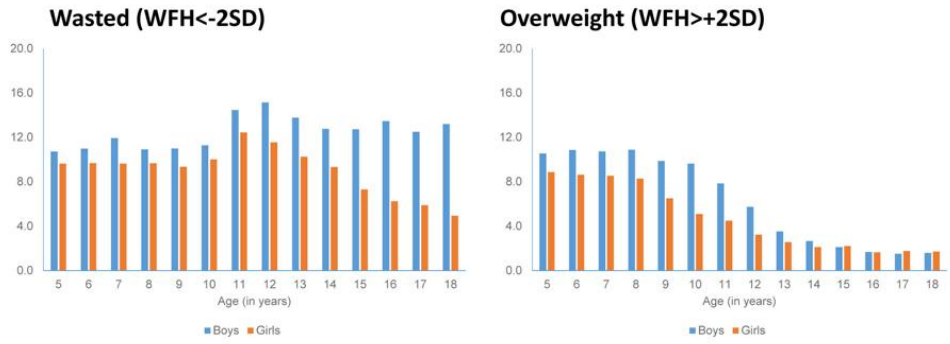


Proportion of children under five years with growth monitoring ≥ 4 times within the last 6 months by Province, 2007-2013

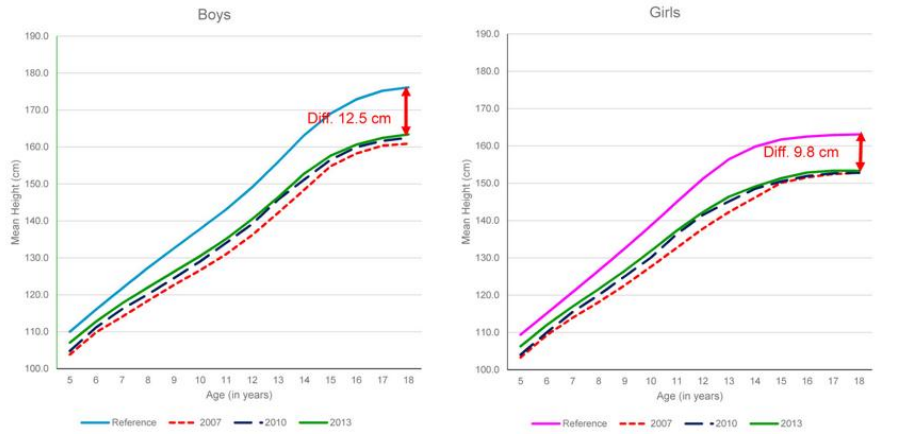


Prevalence of stunted children 5-18 year by gender, Riskesdas 2013

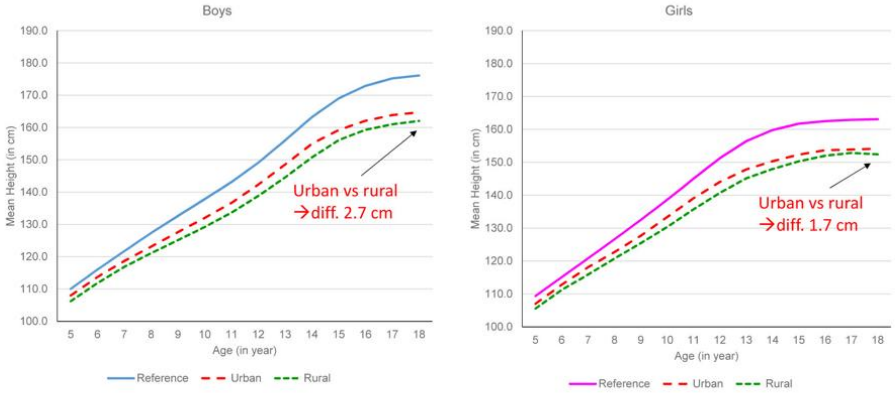
Prevalence of wasted and overweight children 5-18 years by gender, Riskesdas 2013



The change of mean height for Indonesian children 5-18 years from 2007 to 2013 compare to Reference (WHO 2007)



Mean Height of Indonesian children 5 to 18 years compare to Reference (WHO 2007) by Residence, 2013



Mean Nutrient Intake*) by age and gender, Riskesdas 2010

Age (in years)	Boys					Girls				
	Energy Kkal	CHO (gram)	Protein (gram)	Fat (gram)	Fiber (gram)	Energy Kkal	CHO (gram)	Protein (gram)	Fat (gram)	Fiber (gram)
0	843.6	107.1	26.0	30.7	1.1	804.3	104.9	25.8	29.2	1.0
1	1289.2	175.4	47.7	46.1	2.7	1201.3	161.1	43.7	42.6	2.7
2	1558.3	210.9	57.8	53.9	3.6	1485.9	201.0	55.8	50.7	3.6
3	1510.7	206.7	54.9	51.3	4.1	1461.5	200.9	53.6	49.4	3.9
4	1456.5	203.9	52.9	47.8	4.4	1341.0	188.0	47.7	43.9	4.3
5	1362.0	195.2	47.6	42.8	4.6	1291.5	183.5	44.7	41.6	4.6
6	1287.8	185.3	45.3	39.9	4.8	1263.2	182.0	44.0	39.8	4.8
7	1281.3	188.0	44.4	38.7	5.1	1260.5	180.6	44.1	39.5	5.0
8	1328.9	193.7	45.2	40.7	5.3	1268.0	182.2	44.5	39.4	5.2
9	1292.5	189.6	45.8	40.0	5.3	1282.6	186.2	44.4	39.9	5.5
10	1319.5	195.0	44.5	39.4	5.6	1264.8	185.4	43.9	38.5	5.4
11	1349.9	200.3	46.5	40.2	5.7	1288.7	188.2	45.1	39.3	5.6
12	1355.4	198.9	46.8	41.6	5.9	1308.2	190.6	44.9	39.9	5.8
13	1384.1	206.7	47.0	40.0	5.9	1287.3	188.2	45.1	39.6	5.7
14	1390.5	209.7	46.4	39.7	6.1	1276.9	187.9	44.6	37.6	5.9
15	1459.7	219.9	49.5	42.3	6.6	1280.1	187.4	44.9	39.0	5.8
16	1459.5	219.8	49.3	41.7	6.5	1303.5	189.8	45.9	40.2	6.0
17	1526.6	234.1	51.0	41.9	6.8	1280.9	186.6	44.9	38.5	5.9
18	1494.6	229.2	48.9	41.5	6.4	1303.3	189.6	45.3	39.6	6.1

Mean Nutrition Intake (% to RDA) by age & gender, Riskesdas 2010

Age (in years)	Boys					Girls				
	Energy	CHO	Protein	Fat	Fiber	Energy	CHO	Protein	Fat	Fiber
0	116.4	130.6	144.4	85.4	10.6	110.9	128.0	143.4	81.1	10.4
1	114.6	113.2	183.4	104.8	17.1	106.8	103.9	168.3	96.8	16.6
2	138.5	136.1	222.5	122.4	22.2	132.1	129.7	214.7	115.1	22.2
3	134.3	133.4	211.3	116.5	25.9	129.9	129.6	206.3	112.2	24.3
4	91.0	92.7	151.1	77.1	19.8	83.8	85.4	136.3	70.8	19.6
5	85.1	88.7	136.0	69.1	20.7	80.7	83.4	127.7	67.0	20.8
6	80.5	84.2	129.4	64.4	21.9	78.9	82.7	125.6	64.3	21.9
7	69.3	74.0	90.6	53.8	19.6	68.1	71.1	90.0	54.9	19.4
8	71.8	76.3	92.3	56.5	20.5	68.5	71.7	90.8	54.7	19.9
9	69.9	74.7	93.4	55.6	20.3	69.3	73.3	90.5	55.4	21.0
10	62.8	67.5	79.4	56.2	19.3	63.2	67.4	73.1	57.4	19.4
11	64.3	69.3	83.0	57.4	19.8	64.4	68.4	75.2	58.6	20.1
12	64.5	68.8	83.5	59.4	20.2	65.4	69.3	74.9	59.5	20.6
13	55.9	60.8	65.3	48.1	17.0	60.6	64.4	65.4	55.8	19.1
14	56.2	61.7	64.5	47.8	17.5	60.1	64.4	61.9	53.0	19.7
15	59.0	64.7	68.7	51.0	18.8	60.2	64.2	62.4	54.9	19.4
16	54.6	59.7	74.6	46.9	17.7	61.3	65.0	77.9	56.6	20.0
17	57.1	63.6	77.3	47.1	18.4	60.3	63.9	76.1	54.2	19.8
18	55.9	62.3	74.0	46.7	17.4	61.3	64.9	76.8	55.8	20.3

Smoking Behavior by age and gender, Riskesdas 2013

Age (in years)	Boys				Girls			
	Daily smokers	Occasional Smokers	Ex Smokers	Not smokers	Daily smokers	Occasional Smokers	Ex Smokers	Not smokers
10	0.0	0.1	0.4	99.4	0.0	0.0	0.0	100.0
11	0.1	0.7	0.7	98.6	0.0	0.0	0.0	99.9
12	0.3	1.0	0.9	97.8	0.0	0.0	0.0	99.9
13	1.0	2.2	2.0	94.8	0.0	0.1	0.0	99.9
14	4.0	5.2	2.7	88.1	0.0	0.1	0.1	99.7
15	8.6	9.8	3.7	77.9	0.0	0.1	0.2	99.6
16	15.1	13.3	3.6	68.0	0.1	0.2	0.2	99.5
17	22.8	15.4	4.2	57.5	0.1	0.3	0.3	99.2
18	28.7	15.2	4.0	52.1	0.4	0.2	0.4	98.9

Continuum of Care: 0-6 years will have positive effect to next aged group