



# Investing in School Health and Nutrition in Indonesia

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October 2009



Preparation of this document received partial funding from the Netherlands and European Commission Basic Education Capacity Trust Fund under the supervision of the World Bank. The findings, interpretations, and conclusions expressed in this paper are that of the author and do not necessarily reflect the views of The World Bank, the Government of the Netherlands, the European Commission, or the Government of Indonesia. The World Bank does not guarantee the accuracy of the data included in this work

Cover picture: ANTARA

## Acronyms

|          |   |
|----------|---|
| ARI      | Acute Respiratory Infection                                       |
| BAPPENAS | Badan Perencanaan Pembangunan Nasional (National Planning Agency) |
| BIAS     | Bulan Imunisasi Anak Sekolah (School Immunization Program)        |
| EPI      | Expanded Program on Immunization                                  |
| FRESH    | Focusing Resources on Expanded School Health                      |
| GOI      | Government of Indonesia   |
| IDD      | Iodine Deficiency Disorders                                       |
| IQ       | Intelligence Quotient   |
| IRD      | International Relief and Development                              |
| MDG      | Millennium Development Goal                                       |
| MoNE     | Ministry of National Education                                    |
| MoH      | Ministry of Health  |
| MoHA     | Ministry of Home Affairs  |
| MoRA     | Ministry of Religious Affairs                                     |
| MOU      | Memorandum of Understanding                                       |
| NGO      | Non-Governmental Organization                                     |
| NHHS     | National Health and Household Surveys                             |
| SD       | Standard Deviation  |
| SHN      | School Health and Nutrition                                       |
| SISWA    | System Improvement for Sector-Wide Approaches                     |
| SPM      | Standar Pelayanan Minimal (minimum standards of service)          |
| UKS      | Usaha Kesehatan Sekolah (School Health Program)                   |
| UNESCO   | United Nations Educational, Scientific and Cultural Organization  |
| UNICEF   | United Nations Children's Fund                                    |
| USDA     | United States Department of Agriculture                           |
| USAID    | United States Agency for International Development                |
| WFP      | World Food Program  |
| WHO      | World Health Organization   |
| YKB      | Yayasan Kusuma Buana  |

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## Executive Summary

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School health and nutrition (SHN) interventions are important investments for the education since poor health and nutrition among school-age children impede achieving education objectives. Diseases and malnutrition affect children throughout childhood and while school-age children are at lower risk for dying from these conditions, disease and malnutrition take their toll on participation and progress in school and learning. Hungry and poorly nourished school-age children have lower cognitive abilities—beyond any losses to cognition that may have resulted from nutrition deficits and poor health suffered during their pre-school years or earlier—and naturally perform less well and are more likely to repeat grades and drop out of school than children without impairments. The irregular school attendance of malnourished and unhealthy children is one of the key factors in their poor performance.

Many of the diseases and malnutrition that impact school-age children are preventable and/or treatable. Schools offer a readily available infrastructure to reach children and since some treatments are inexpensive, SHN interventions are among the most cost-effective health interventions. Focusing Resources on Effective School Health (FRESH) is a framework developed through interagency efforts to promote and support effective school health and nutrition policy and programming that was launched in 2000 at the Dakar Education for All Forum. This framework specifies four core components to consider when designing school health and nutrition programs: health-related school policies; provision of safe water and sanitation; skills-based health education; and school-based health and nutrition services.

SHN interventions also improve equity. Diseases and some forms of malnutrition affect the poor more than the non-poor. Children from poorer households are also less able to have access to or afford treatment. SHN interventions redress this inequity and unlike many educational interventions such as text-books, teacher training or others that may tend to benefit the highest achieving students the most (possibly increasing inequality in the education system), SHN benefits the poorest children more and helps those who are most disadvantaged the chance to take better advantage of their educational opportunities.

## Poor Health and Nutrition among School-Age Children in Indonesia

Many of the diseases afflicting children in young childhood (0-5 years) persist during the school-age years, especially in the early school years (6-8 years). Malaria, acute respiratory infection and diarrhea continue to cause significant morbidity and in some cases mortality among the school-age population. Other diseases may become more prevalent and intense among school-age children. Data on reported prevalence of non-specific diarrhea and typhoid among school-age children in Indonesia show



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that the proportion of children affected by province ranges from 2 to 20 percent for diarrhea and from less than 1 to more than 3 percent for typhoid. Rates of acute respiratory infection (ARI) at school-age are almost uniformly high; 20 percent or higher across all provinces and 30 percent or higher in almost half of provinces. Malaria has been identified as a major cause of school absenteeism and lower educational achievement. In Indonesia, malaria is not a universal problem as most parts of the country are no longer seriously affected by the disease. The exception is at least three provinces (Papua, Papua Barat, and NTT) where rates among school-age children range from as high as almost 70 percent in Papua to about 15 percent in NTT.

It is well known and documented that worm infections reach their peak in school-age children in countries where these infections are not under control because of poor or deficient water and sanitation systems. Worm infections can play a significant role in the nutrition and health status of school-age children and where highly prevalent they contribute to absenteeism and reduced learning capacity resulting in lower educational attainment. Indonesia is identified by WHO as one of the countries where worm infections represent a public health problem; WHO estimates suggest that more than 17 million people are at risk for infection and that very few are reached with treatment.

Chronic undernutrition measured by height-for-age, an indication of a lack of food experienced over an extended period of time is associated with lower school performance. National level data show rates of stunting range from about 20 to more than 50 percent by province and, in the overwhelming majority of provinces, more than a third of children 6 to 15 years old are stunted. SHN interventions are not typically designed with the intent of alleviating stunting particularly since most stunting has occurred by the age of two. However, levels of stunting at the province, district and sub-district level can be useful for targeting and monitoring SHN interventions. Also, it might be possible to expect some residual benefits of improvements in height-for-age, especially in the early (kindergarten and primary) school years or during the adolescent growth spurt by addressing food insufficiency at school age.

Among the most critical micronutrient deficiencies at school-age are iron deficiency anemia and iodine deficiency disorders (IDD). Iron deficiency anemia affects mental development and cognitive abilities and during pregnancy IDD puts girls/women at high risk for complications. IDD are also directly related to cognitive impairment both if experienced in-utero when cognitive effects can be severe and when deficiency is suffered in childhood through the school-age years. Data on micronutrients among school-age children in Indonesia are limited. Anemia affected about half the population of school age children (5-9 years) and (10-14 years) in 1995. The use of iodized salt nationally in 2001 was 66 percent; district level results showed district-level use of iodized salt varied significantly from 9 to 100 percent with 21 percent of districts reporting adequate household consumption rates below 50 percent.

Children spend a significant amount of time in and around their schools and appropriate facilities at school can encourage or discourage attendance. Girls, in particular, may choose not to go to school rather than have to deal with inadequate facilities. When a school lacks access to a basic water supply and sanitation facilities and its students have poor hygiene habits, the incidence of major childhood illnesses increases adversely affecting school children's participation and learning capacity. Much more progress is needed in Indonesia both in improving access to clean drinking water and improved sanitation.

#### Potential Gains from Improving School-Age Health and Nutrition

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A country's education and economic status is closely linked to its health status: improve nutrition and health and education and the economy will be strengthened. Bettering nutrition and health among the school-age children, like the critical effort to improve nutrition and health among infants, is a strategic element in the effort to develop the community. Healthier and better nourished children stay in school longer, learn more, and become healthier and more productive adults. Addressing

nutrition and health among school-age children does more than improve the health and learning capacity of the treatment group; it also brings intergenerational nutrition and health benefits and long-term economic gains as well. Girls who stay in school longer tend to delay childbearing longer than school-leavers, and merely delaying childbearing brings the intergenerational benefits of a lowered birth rate, better birth outcomes, and better child health. The gain from improving health and nutrition at school age is a combination of all of these benefits to health and education, in the short-term and future.

About 686,000 (142,000 boys; 544,000 girls) primary school children are out of school in Indonesia. Regional variations also exist; Papua lags significantly behind even in primary school with net enrollment at about 80 percent and about 47% at junior secondary. Other provinces lag behind the national average at junior secondary level including Maluku, NTT (both at 47%) and Gorontalo (52%). Despite progress in the transition from primary to junior secondary school, only about 55 percent of children from low-income families are enrolled in junior secondary schools. Encouraging and supporting efforts to help children enroll in and complete the basic education cycle remain high priority for the education sector. Providing a healthy environment for children and overcoming any health and/or nutrition (hunger) barriers to school enrollment and participation are important for reaching education goals.



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At school-age, especially in adolescence, young people begin to make independent decisions about their health and to form attitudes and adopt behaviors that influence their current and future health as well as the health of their future children. Girls, particularly adolescent girls, are the key to the health of future generations. Good physiological development during adolescence prepares girls for pregnancy, childbirth, and motherhood. Ensuring that girls are well nourished and healthy—especially regarding their increased needs for iron and for growth before the reproductive years begin—will decrease the incidence of low birth weight and birth defects in their children and will reduce their risk of dying during childbirth. Schools can provide the infrastructure to easily reach girls with high priority education and health and nutrition services.

Young people must have access to information and skills to be able to protect themselves from high risk behaviors—smoking, alcohol, reproductive and sexual health, including HIV/AIDS. Schools may offer one of the best venues for reaching all young people with the information and education that will help them lead healthier and safer lives. In addition, schools are also the best opportunity for promoting appropriate nutrition, food choices and physical activity to help prevent overweight in children. The proportion of school-age children in Indonesia with a high Body Mass Index (BMI) is alarmingly high in some provinces and appears to have dramatically increased in the past seven years. Effective promotion of key health, nutrition and physical activity practices is crucial to alleviating the significant burden of overweight, obesity and non-communicable diseases.

### Building Blocks for School Health and Nutrition Investment in Indonesia

National policies on school health have been in place since the 1950s. In the 1970s a task force for education and health was formed to implement health at the primary school level. In 1984 a school health policy and memorandum of understanding (MOU) was created that involved four ministries:

Ministry of National Education (MoNE), Ministry of Religious Affairs (MoRA), Ministry of Health (MOH), and Ministry of Internal Affairs (now called Home Affairs) leading to the Usaha Kesehatan Sekolah (UKS) School Health Program. The purpose of UKS is to improve the quality of education and student learning achievement by: increasing healthy life skills of students; creating a healthy school environment; and improving knowledge, changing students' attitudes, and maintaining health by preventing and curing diseases. This goal is reflected in the three program pillars—health education, health services at schools and healthy school environment.

At the school level the headmaster and one or more UKS teacher/"gurus" are appointed to oversee UKS activities in the school. The school is expected to collaborate with health center staff to implement some of the UKS activities. The central level, primarily through the MoNE, plays a role in setting standards, providing guidelines and establishing expectations for the UKS program.



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Despite the creation of the UKS program in Indonesia many decades ago, remarkably little data and information are available on the investment in the UKS program at any level—central, district, sub-district, school—or the impact of its programs and activities. As a national program implemented within a decentralized system, what happens under the UKS program in one district may look very different than what is supported in another if a UKS program exists at all. At the province and district level the resources devoted to UKS are dependent on the commitment of local legislative and decision-making bodies.

The draft minimum level of services (Standar Pelayanan Minimal/SPM) for schools includes standards for a clean water supply and adequate sanitation facilities—hand washing facilities and toilets. Several efforts are underway under the auspices of different donor institutions and the Ministry of Health and the Ministry of National Education to improve the water and sanitation environment at schools. A network for environmental sanitation and clean water at schools is being established to help coordinate implementation of various activities and programs.

The School Immunization Program—Bulan Imunisasi Anak Sekolah (BIAS) represents perhaps the most consistent and effective health center—school linked health service provision. Introduced in 1998 initially as a long-term control of tetanus by providing life-long immunity to all primary school graduates and diphtheria boosters, the BIAS program was integrated within the existing UKS structure. In practice, UKS does not appear to play a major role in implementation. The responsibility for the BIAS program is through Expanded Program on Immunization (EPI) and health workers work directly with schools without UKS support.

The Ministry of Home Affairs (MoHA) maintains a department responsible for school feeding although resources for programs now need to be allocated by the district so the central role is limited and uncertain. Prior to decentralization, school feeding was a major program under BAPPENAS, the National Development Planning Agency. Currently, school feeding is the responsibility of district/city government and not all districts implement programs. MoHA ostensibly coordinates school feeding implementation and guidelines are now in the process of review and revision. In 2009 school feeding continues under the auspices of the World Food Program (WFP). Several non-profit organizations carry out relatively small-scale deworming and iron supplementation programs in various regions of the country.

## Summary of Recommendations and Next Steps

The health and nutrition status of school-age children in Indonesia are likely to be important factors in the achievement of “education for all” and MDG goals. If students are not healthy and well-nourished schools cannot achieve their primary mission of providing effective, efficient and equitable education. The interventions to address some of the major health and nutrition impediments to learning are highly cost-effective and benefit the poor and disadvantaged children more than other education interventions while also reducing gender inequities.



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### Recommendations

**Target SHN interventions where education outcomes are low and health insults and poor nutrition status or hunger are high**—The investment in SHN programs must give highest priority to those districts and schools where health and nutrition are inhibiting access, participation and progression in school, especially among girls.

**Strengthen collaboration within the education sector between MoNE and MoRA and between health and education**— SHN is aimed first and foremost at helping to achieve education goals, and the Ministry of National Education and Ministry of Religious Affairs should continue to take the lead in SHN. Collaboration with the health sector is essential as the interventions require health sector guidance and support.

**Take advantage of the returns from certain low-cost SHN interventions by identifying and implementing district-level approaches to remediation**—Providing mass delivery of some SHN services at the district level may make sense if health problems affect a large proportion of the school-age population in a certain area/district.

**Identify and develop a set of “packages/models” that take into account the three main contexts in Indonesia, urban, rural, island/coastal and also the type of school (e.g., boarding)**—The FRESH framework for SHN provides overall guidance for SHN interventions but specific models for the main Indonesia contexts need to be developed.

**Continue and expand on the current efforts to ensure clean water and adequate sanitation at all schools**—Support for long-term solutions to water and sanitation at schools should be complemented by alternative technologies to ensure clean water (e.g., purification) and low-cost latrines at schools.

**Improve the quality of health education/behavior focused communications**—Effective health, hygiene, nutrition and other education is required to promote practices linked to school-based services, (e.g., clean water, hand washing, etc.) and to develop other healthy behaviors.

**Develop separate model (or models) for stemming the tide of overweight and obesity**—Although not directly related to education, the seriousness of the increase in the issue of overweight in children in Indonesia suggests that strategies to promote appropriate nutrition and physical activity practices should be an element of SHN in some contexts.

#### Next Steps

- **Utilize on-going “good practices in basic education” mechanisms to identify local private sector, NGO and/or government-supported school-based health and nutrition interventions/programs** that offer potential for creating context-specific “good practice models” for SHN. Document and package these “good practices” linked to specific contexts.
- **Create a SHN “tool kit” and training modules building off of the “good practice” and international experience.** The tool kit would be for use at the district and school level to raise awareness and build capacity in identifying and addressing health and nutrition needs among school-age children in different contexts.
- **Conduct an in-depth institutional capacity assessment at various levels** including national, district, sub-district and school to identify approaches to and needs for capacity building to support additional promotion and implementation of school health and nutrition interventions.

## Introduction

School-age children (5-18 years)<sup>1</sup> represent an important and diverse target group for health and nutrition interventions. Children who have reached their fifth birthday are well past the period of high risk for child mortality, and any insults to health and nutrition suffered prior to age five, particularly during the first two years of life, may have caused irreversible damage affecting the child's capacity to achieve his/her full potential both in terms of physical and mental growth and development.<sup>2</sup> That said, growth and development continue throughout the school-age years. In adolescence alone, children gain as much as 15 percent of adult height and 50 percent of adult weight, and prior to that period children continue to gain height and weight.

Hungry and poorly nourished school-age children have lower cognitive abilities, beyond any losses to cognition that may have resulted from nutrition deficits and poor health suffered during their pre-school years or earlier. Children with diminished learning capacity and sensory impairments naturally perform less well and are more likely to repeat grades and to drop out of school than children who are not impaired. They also enroll in school at a later age, and finish fewer years of schooling. The irregular school attendance of malnourished and unhealthy children is one of the key factors in their poor performance.

Yet, many of the diseases and malnutrition that affect school-age children are preventable and/or treatable. Furthermore, since schools offer a readily available infrastructure to reach children and some of the treatments are inexpensive, school-based health and nutrition interventions are one of the most cost-effective health interventions (see Table 1). This estimate of cost-effectiveness is without consideration of the effectiveness of SHN in improving educational outcomes which, if included, would further increase the cost-effectiveness of SHN.

**Table 1: Cost-Effectiveness of School Health and Nutrition**

| Intervention                                       | Cost per DALY* gained |
|--|-----------------------|
| Immunization Plus                                  | 12-30                 |
| School Health and Nutrition**                      | 20-34                 |
| Family Planning Services                           | 20-150                |
| Integrated Management of Childhood Illness Program | 30-100                |
| Prenatal and Delivery Care                         | 30-100                |
| Tobacco and Alcohol Prevention Program             | 35-55                 |

\*Disability Adjusted Life Year—a unit used to measure both global burden of disease and the effectiveness of health interventions, as indicated by reduction in the disease burden. (World Development Report, 1993)

\*\*Includes treatment of worm infection, micronutrient deficiencies and provision of health education

Source: Bobadilla, et al., 1994

<sup>1</sup> Classification of school-age varies by country and agency. The primary focus of this report is children ages 5-18 years including kindergarten (5-6 years); primary school (6/7-12-years); and junior secondary (13-15 years).

<sup>2</sup> Repositioning Nutrition as Central to Development, World Bank, 2006

SHN interventions are also attractive for their ability to improve equity. Diseases and some forms of malnutrition affect the poor more than the non-poor. And, not only are children from poorer households more likely to suffer from diseases, but they are also less able to cope with them—have access to or afford treatment. SHN interventions/programs can redress this inequity in access to health and nutrition care. Furthermore, unlike many educational interventions such as text-books, teacher training or others that may tend to benefit the highest achieving students the most, and as a result may increase inequality in the education system, SHN benefits the poorest children more and helps those children who are most disadvantaged the chance to take better advantage of their educational opportunities.<sup>3</sup> All told, improving or maintaining good health and nutrition at school-age can reap significant benefits for both health and education through a combination of immediate and long-term returns for individual children, families and nations.

### SHN and the Millennium Development Goals (MDGs)

Simply stated, school health and nutrition (SHN) comprises interventions or programs that are aimed at ensuring that children are ‘healthy to learn and learn to be healthy’ (see Table 2). On the education side (healthy to learn) addressing poor health and nutrition at school-age is important for the achievement of “Education for All” and related MDG goals, particularly those that address access, gender equity and the quality of basic education. Education is an essential part of achieving MDG #1 (alleviation of poverty and hunger) and school feeding can specifically contribute to alleviating short-term hunger. On the health side (learn to be healthy), schools are an important forum for health and nutrition education, including HIV/AIDS prevention as well as for other interventions to redress the impact of malaria and other infectious diseases related to MDG #6. Taking a life cycle approach, SHN can focus on adolescent girls and potentially play a role in achieving MDG #5 related to maternal health. In short, the link between the SHN and the MDGs is through a combination of education and health impacts the result of SHN programming.

**Table 2: School Health and Nutrition Overview**

| <b>Healthy to Learn</b>   | <b>Learn to be Healthy</b>  |
|---|---|
| Well-Nourished<br>Not Hungry<br>Free from Disease<br>Safe School Environment<br>No Unaddressed Sensory Impairments<br>Support for Special Needs | Appropriate behaviors related to health, nutrition, sanitation, etc. to maintain current and future health<br>Appropriate behaviors to avoid risky behaviors (tobacco, HIV/AIDS, other) |

<sup>3</sup> Jukes, Drake and Bundy, 2008

## Poor Health and Nutrition Impact on Education

Many of the diseases afflicting children in young childhood (0-5 years) persist during the school-age years, especially in the early school years (6-8 years). Malaria, acute respiratory infection and diarrhea continue to cause significant morbidity, and in some cases, mortality among the school-age population. Other diseases, most notably, intestinal parasitic infections may become more prevalent and intense among school-age children. Health and nutrition status is a powerful determinant of learning capacity and how well a child performs in school. Poor health can diminish a child's cognitive development either through physiological changes or by reducing the ability to participate in learning activities—or both.

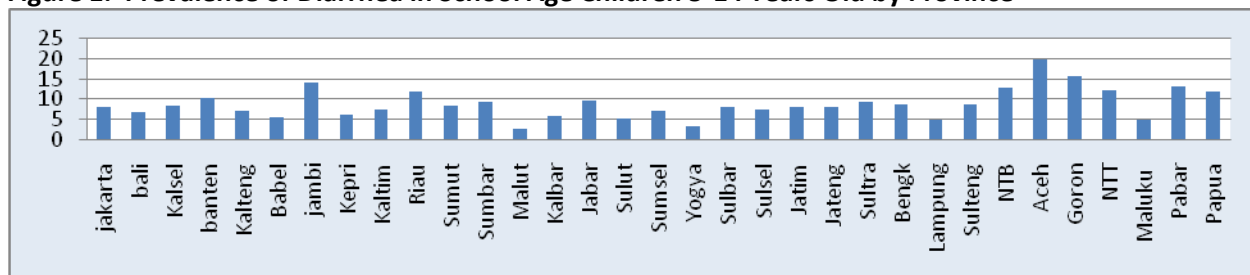
### Infectious Disease at School-Age

School-age children (5-14 years) in Indonesia have the lowest rates of mortality among all age groups representing 1.9 percent of total mortality compared to 2.6 and 9 percent for children 1-4 years and less than one, respectively.<sup>4</sup> These national level mortality data hide what are likely to be significant regional and district-level variations in mortality even at school-age. For morbidity, the same pattern holds true; while school-age children are less affected than younger children, infectious diseases at school-age continue and are certain to negatively impact educational outcomes. Province-level prevalence information too masks variability in disease rates at the district and sub-district levels which are likely to show certain areas within the province as a whole with high rates of infectious disease at school-age.

### Diarrhea and Typhoid

Data on reported prevalence of non-specific diarrhea (see Figure 1) and typhoid (see Figure 2) among school-age children show that the proportion of children affected ranges from 2 to 20 percent for diarrhea and from less than 1 to more than 3 percent for typhoid. Aceh stands out as the province with the highest prevalence of diarrhea (20 percent) and also with a high rate of typhoid (almost 3 percent). Even in some less poor provinces, Kalimantan Selatan and Banten rates of typhoid are more than 3 percent. Typhoid is a serious infection, associated with poor food hygiene and inadequate sanitation and in endemic areas incidence often peaks at school-age. More severe cases of diarrhea and typhoid among school-age children would contribute to absenteeism and diminished learning opportunities.

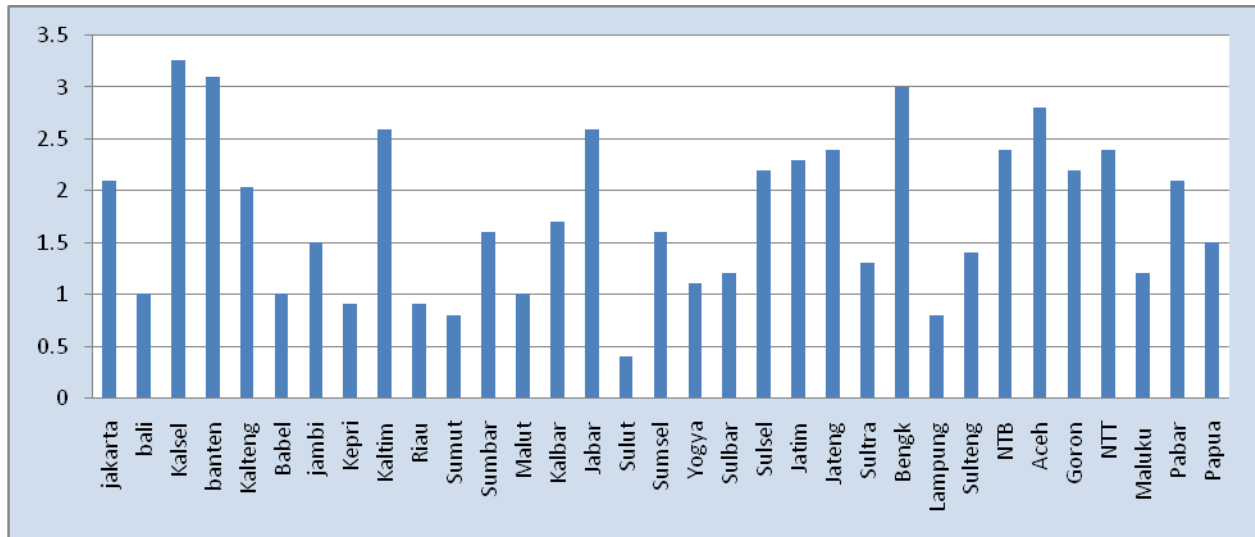
**Figure 1: Prevalence of Diarrhea in School Age Children 5-14 Years Old by Province\***



Source: Riskesdas Province Reports, 2007; \*Provinces are presented left (lowest) to right (highest) according to level of poverty; see Annex 1 for complete names of provinces

<sup>4</sup> Riskesdas, 2007

**Figure 2: Typhoid Prevalence among children 5-14 years by Province\***

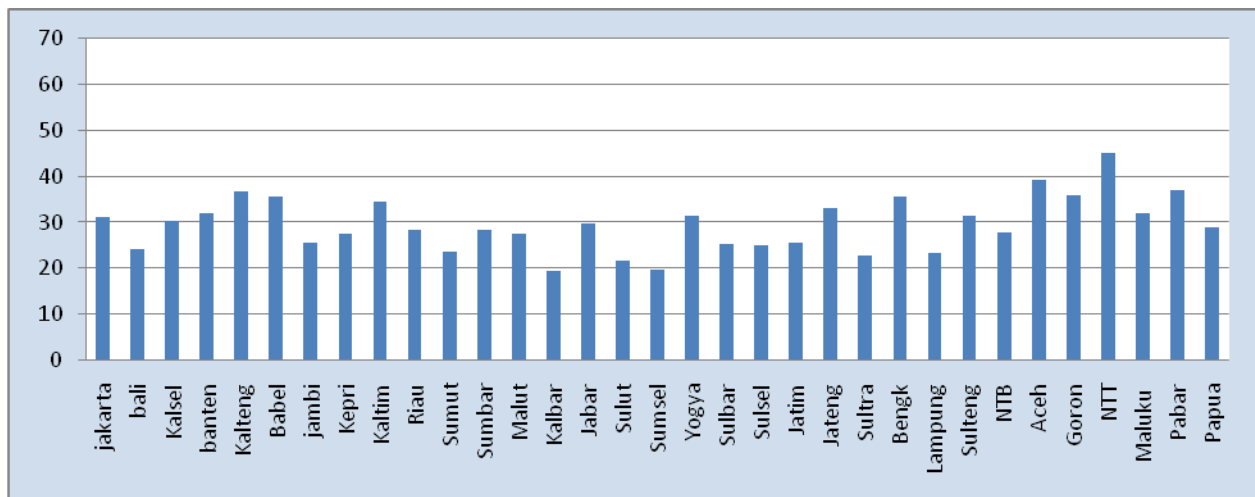


Source: Riskesdas Province Reports, 2007; \*Provinces are presented left (lowest) to right (highest) according to level of poverty

**Acute Respiratory Infection**

Rates of acute respiratory infection (ARI) at school-age are almost uniformly high; 20 percent or higher across all provinces and 30 percent or higher in almost half of provinces. No information is available on the severity of infection however these rates of infection suggest an impact on school attendance and performance as illness diminishes child learning capacity and achievement.

**Figure 3: Percentage of ARI among children 5-14 years by Province\***



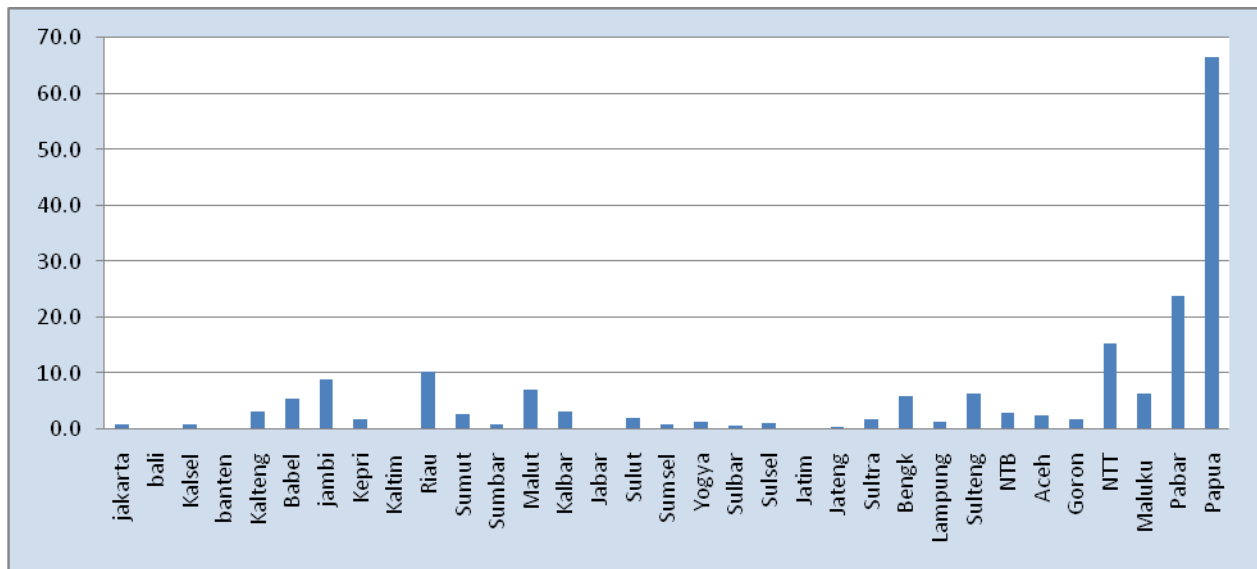
Source: Riskesdas Province Reports, 2007

\*Provinces are presented left (lowest) to right (highest) according to level of poverty

## Malaria

Malaria has been identified as a major cause of school absenteeism and lower educational achievement. In Indonesia, malaria is not a universal problem as most parts of the country are no longer seriously affected by the disease. The exception is at least three provinces (Papua, Papua Barat, and NTT) where rates among school-age children range from as high as almost 70 percent in Papua (see Figure 4) to about 15 percent in NTT. Malaria can be prevented through the use of insecticide-treated bed nets and treated with anti-malarial drugs, sometimes administered through schools for school children.

**Figure 4: Percentage of Malaria among Children 5-14 by Province\***



\*Provinces are presented left (lowest) to right (highest) according to level of poverty  
Source: Riskesdas Province Reports, 2007

## Intestinal Parasitic Infection

It is well known and documented that worm infections reach their peak in school-age children in countries where these infections are not under control because of poor or deficient water and sanitation systems.<sup>5</sup> Worm infections can play a significant role in the nutrition and health status of school-age children and where highly prevalent they contribute to absenteeism and reduced learning capacity resulting in lower educational attainment. Because school children often harbor some of the heaviest worm burdens (which increases symptoms of disease), schools offer a readily available infrastructure for deworming, and school-based treatment is safe and inexpensive, school-based deworming is highly recommended.<sup>6</sup> Deworming has been shown to improve cognition. Effects are greatest among children with poor nutrition status and those with the heaviest worm burdens.<sup>7</sup>

<sup>5</sup> [www.dewormtheworld.org](http://www.dewormtheworld.org)

<sup>6</sup> Hall and Horton, 2009

<sup>7</sup> Nokes et al., 1992; Simeon et al., 1995; Grigorenko et al., 2006.

Treatment of the school-age population also weakens a major source of community infection and the results can be dramatic.<sup>8</sup>

Indonesia is identified by WHO as one of the countries where worm infections represent a public health problem; WHO estimates suggest that more than 17 million people are at risk for infection and that very few are reached with treatment.<sup>9</sup> The 2006 Indonesia Health Profile shows prevalence rates among school children of more than 30 to 40 percent based on examinations from 27 provinces over the period 2002-2006.

A number of smaller scale program initiatives provide some further insight into the prevalence of worm infections. A long-standing program of school-based parasite control supported by the Yayasan Kusuma Buana (YKB), donors and local government DKI Jakarta as well as outside of Jakarta (Yogyakarta, Semarang and Denpasar) have tracked levels of and treated worm infection in selected primary schools for the past 20 years. Initial levels of infections before programs were initiated reached almost 100 percent in some schools. Within 5-6 years of on-going, selective treatment<sup>10</sup>, prevalence levels drop to less than 50 percent in these same schools, and ultimately after on-going, selective treatment for 20 years infection rates are less than 10 percent. Shorter-term, but also small-scale deworming programs implemented through Mercy Corps within the context of school feeding show initial rates of intestinal worm infections before programs began were from 20 to 50 percent (see Table 3). While these data do not present a comprehensive picture of the scope and magnitude of the problem of worm infection among school-age children in Indonesia, they are sufficient to conclude that where sanitation and water systems are inadequate it is likely that worm infections are prevalent among school children. The precise levels and types of worms are uncertain and additional surveys would be needed to identify the highest priority areas for intestinal helminth control.

**Table 3: Pre and Post Program-Level Intestinal Helminth Infection Rates**

| Location/Sample            | Pre-treatment Infection Rates | Post Infection Rates |
|----------------------------|-------------------------------|----------------------|
| Jakarta (40-500 schools)   | 80%                           | <5%                  |
| Seribu Island (18 schools) | 96%                           | 50%                  |
| Sumatra (2000+students)    | 20-48%                        | NA                   |

References: Yayasan Kusuma Buana (YKB), 1986-2007; Mercy Corps, 2005

<sup>8</sup> In the Caribbean Island of Montserrat, for example, more than 90 percent of schoolchildren age 4 through 12 were dewormed at four-month intervals for two and one-half years. Less than 4 percent of adults received treatment during the same period. As expected, the incidence of parasitic infection in the school population declined to almost zero. And infections in the adult population declined an almost equal amount because of reduced transmission from the school-age population. (Bundy, et al., 1990)

<sup>9</sup> [www.who.int/neglected\\_diseases/preventive\\_chemotherapy](http://www.who.int/neglected_diseases/preventive_chemotherapy)

<sup>10</sup> Selective treatment involves stool examination prior to treatment; only infected children receive treatment. Usually this approach is not recommended as it is expensive and mass treatment protocols are safe and effective. The YKB selective treatment approach is built on the premise that examinations provide a platform for education and promotion of appropriate hygiene. Unit costs for parasite diagnosis are extremely low given a large number of diagnoses processed. Program longevity has created community demand and addressed compliance issues.

## Hunger and Malnutrition at School-Age

Much of what is known about the impact of hunger and malnutrition at school-age has been learned within the context of school feeding programs. Short-term hunger has been widely studied in developed and developing countries alike by looking at the effects of missing breakfast on cognition and performance. Alleviating short-term hunger at school helps children to be more attentive and to raise their cognitive abilities. Improving child cognition can advance other educational outcomes including school achievement (performance on tests) and school progress (regular, progression from grade to grade to completion of basic education).<sup>11</sup>

Chronic undernutrition measured by height-for-age, an indication of a lack of food experienced over an extended period of time, and deficiencies of certain micronutrients are both associated with lower school performance.<sup>12</sup> Addressing micronutrient deficiencies almost uniformly shows an improvement in cognition or achievement although some programs only show an impact on children who are malnourished.<sup>13</sup> The impact of micronutrient interventions<sup>13</sup> is more significant for children with lower initial micronutrient status.<sup>14</sup> A link between chronic malnutrition and school performance—lower achievement in stunted children—has been widely documented. Since poverty is a factor in stunting however, a causal relationship between stunting and educational outcomes cannot be concluded.<sup>15</sup>

Taken together, addressing undernutrition and hunger can enhance a child's capacity to learn although the size and nature of the impact varies greatly depending on both the design of the program, the level and type of micronutrient delivered, and the measure used to assess cognition.<sup>16</sup> As much as a 1/3rd higher standard deviation improvement (5 points) in an IQ test among those participating in the school feeding program has been documented; comparable to the increased difference in IQ between breastfed and non-breast-fed children.<sup>17</sup> Small impacts on child growth have been found. School feeding resulted in a significant, positive, consistent effect weight estimated to be between in the range of 1.3 to 4.5 kilograms over a period of six years.<sup>18</sup> The impact on height showed mixed results and so far has only been shown to be significant for younger children.<sup>19</sup>

### **Stunting at School-Age**

Since children do not change their environment dramatically and their energy and protein needs are maintained or increased (as children expend more energy walking to school and doing other chores and continue to grow) it is unlikely that their growth trajectory changes substantially when they reach

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<sup>11</sup> Del Rosso, 2009

<sup>12</sup> Jukes et al., 2008

<sup>13</sup> Grantham-McGregor et al., 1998, Van Stuijvenberg, 2005, Chandler et al., 1995, Pollitt et al., 1998

<sup>14</sup> Solon et al., 2003; Kruger et al., 1996

<sup>15</sup> Jukes, et al., 2008

<sup>16</sup> Adelman et al., 2008

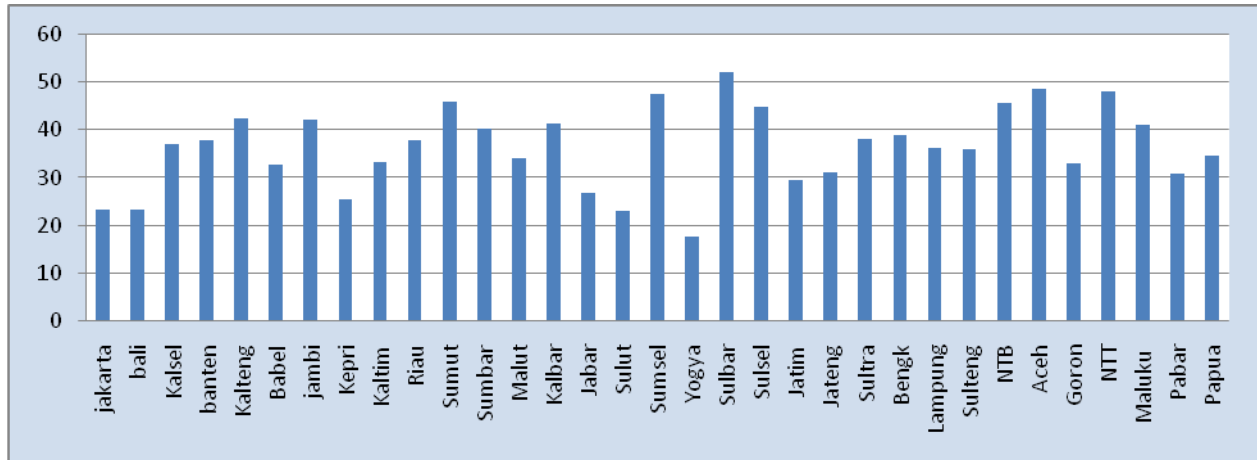
<sup>17</sup> Anderson, 1999

<sup>18</sup> Krisjanssen et al., 2007

<sup>19</sup> One study translated the impact of a school breakfast program into a 1/3rd standard deviation increase in height over the primary school years. In Bangladesh a snack program documented that the snack provided was additive to the child's diet and that it increased BMI (body mass index) by 4.3 percent.

school-age. With no major improvements in a child’s environment, the trend in undernutrition from birth to five years can assume to continue throughout the school-age growth period.<sup>20</sup> This is borne out by data on chronic undernutrition among school-age children in Indonesia. National level data show rates of stunting range from about 20 to more than 50 percent by province and, in the overwhelming majority of provinces more than a third of children 6 to 15 years old are stunted (see Figure 5).

**Figure 5: Stunting among Children 6-15 (height-for-age < 2SD) by Province**

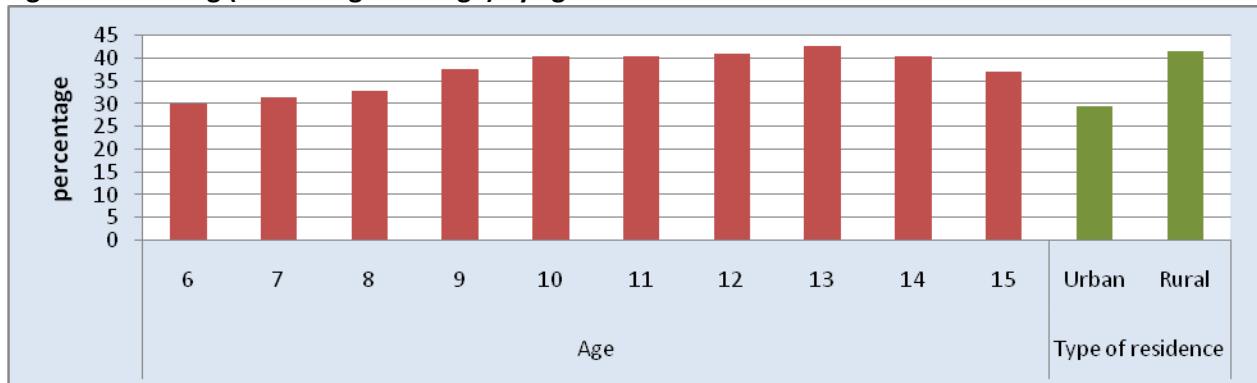


\* Provinces are presented left (lowest) to right (highest) according to level of poverty

Source: Riskesdas, 2007, WHO 2006 Standard

As is the typical pattern worldwide, stunting continues to worsen as children get older and levels are significantly higher in rural compared to urban areas (see Figure 6). SHN interventions are not typically designed with the intent of alleviating stunting particularly since most stunting has occurred by the age of two. Levels of stunting at the province, district and sub-district level can be useful for targeting and monitoring of SHN interventions. Also, it might be possible to expect some residual benefits of improvements in height-for-age, especially in the early (kindergarten and primary) school years or during the adolescent growth spurt by addressing food insufficiency at school age.

**Figure 6: Stunting (< 2SD height-for-age) by age and residence**

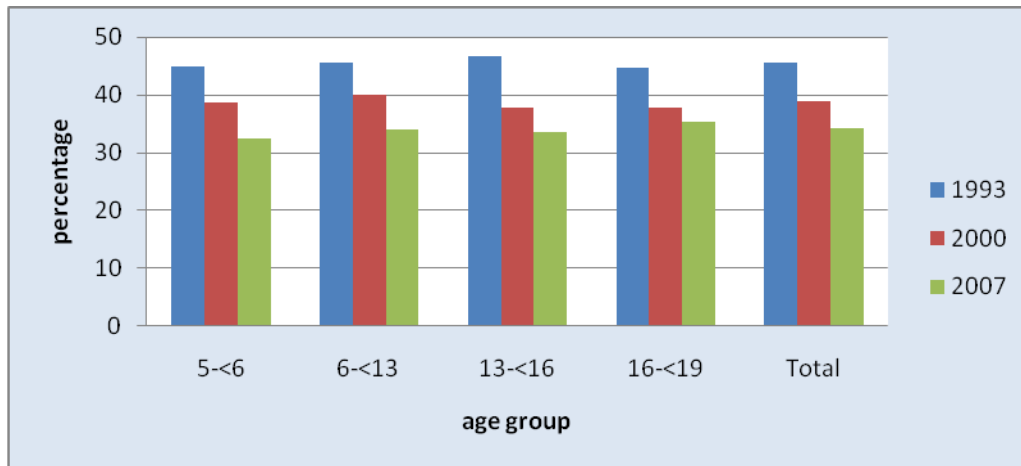


Source: Riskesdas, 2007, WHO Standard, 2006

<sup>20</sup> Research on children who have been adopted and moved to significantly better living conditions can experience catch-up growth. While more effective when very young children are adopted it is still possible for older children to catch-up in growth. (see references in Lancet Series on Maternal and Child Undernutrition, January 2008)

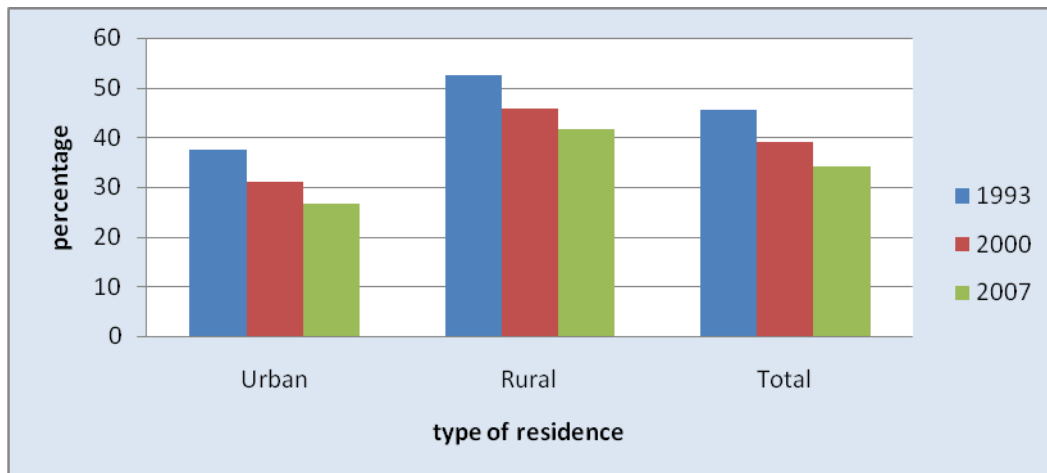
Longitudinal data from Indonesia show some improvement in stunting over the past 15 years on the order of about a ten percent reduction overall, much of that in the past seven years and a result of improvements in younger age-groups (see Figure 7). Gains are almost equal in urban and rural areas (see Figure 8). These data likely underestimate the overall prevalence of stunting as this survey does not include some of the poorest provinces in the Eastern part of the country.

**Figure 7: Trend in Stunting 1993-2007 (< 2SD height-for-age) by Age**



Source: Indonesia Family Life Survey, 1993-2007

**Figure 8: Trend in Stunting (<2SD height-for-age) 1993-2007 by residence**

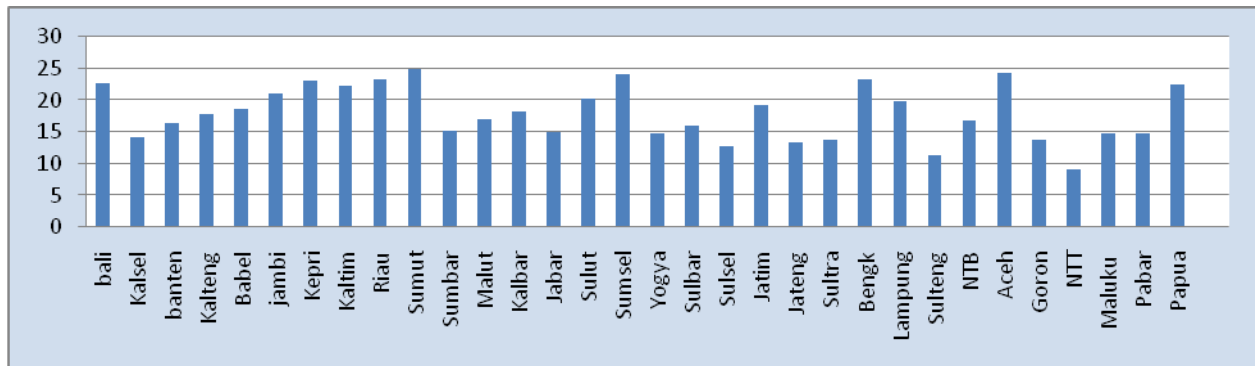


Source: Indonesia Family Life Survey, 1993-2007

**Box 1: Double Burden of Malnutrition in School-Age Children; Undernutrition and Overweight**

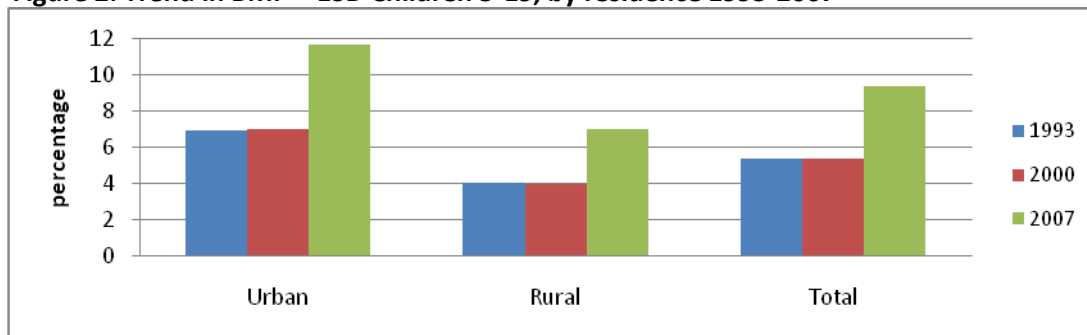
The co-existence of child undernutrition with the problem of overweight children (and adults) has emerged as an important issue in the nutrition landscape in Indonesia. Excess weight gain is now well understood to be an important factor contributing to the development of non-communicable diseases (diabetes, high blood pressure, heart disease, stroke, and several major cancers), currently among the major causes of death in Indonesia. Inappropriate nutrition practices and physical inactivity (and tobacco use) are the primary reasons for this increase in non-communicable disease. The proportion of school-age children with a high Body Mass Index (BMI)<sup>21</sup> is alarmingly large in some provinces (see Figure 1), and appears to have increased relatively dramatically over the past seven years (see Figure 2). While Indonesia continues to struggle with addressing the primary nutrition problem—stunting—the importance of monitoring child growth and development for overweight and identifying strategies for addressing this problem must also be a top priority for the national nutrition agenda.

**Figure 1: Percentage of BMI > +1SD Children 6-15 years, by Province**



Source: Riskesdas, 2007

**Figure 2: Trend in BMI >+1SD Children 5-19, by residence 1993-2007**



Source: Indonesia Family Life Survey, 1993-2007

<sup>21</sup> BMI is an anthropometric index of weight and height that is defined as body weight in kilograms divided by height in meters squared. In children BMI is used to assess underweight, overweight and risk for overweight. BMI in children is gender and age specific.

## Micronutrient Deficiencies

Micronutrient deficiencies are another element of malnutrition affecting populations at all ages, including school-age. Among the most critical deficiencies are iron deficiency anemia and iodine deficiency disorders (IDD). Iron deficiency anemia is important at school age as it affects mental development and cognitive abilities and during pregnancy it puts girls/women at risk for complications. IDD are also directly related to cognitive impairment both if experienced in-utero when cognitive effects can be severe and when deficiency is suffered in childhood through the school-age years. Zinc and vitamin A deficiency at school-age are also being recognized for their negative impact on cognition by contributing to ill health which can lead to absenteeism from school and missed learning opportunities. See Table 4 for a summary of the consequences of micronutrient deficiencies for children.

**Table 4: Consequences of Micronutrient Deficiency on Health, Development and Education**

| Consequences                             | Vit A | Iron | Iodine | Zinc |
|--|-------|------|--------|------|
| Impaired immune function/sick more often | X     | X    |        | X    |
| Absent from school                       | X     | X    |        |      |
| Stunted growth                           | X     | X    |        | X    |
| Lower academic performance               | X     | X    |        |      |
| Lower IQ/diminished mental development   |       | X    | X      |      |

Key Resources: Jukes, Drake and Bundy, SHN and Education for All, 2008; Del Rosso and Marek, Class Action, 1996

### *Iron deficiency*

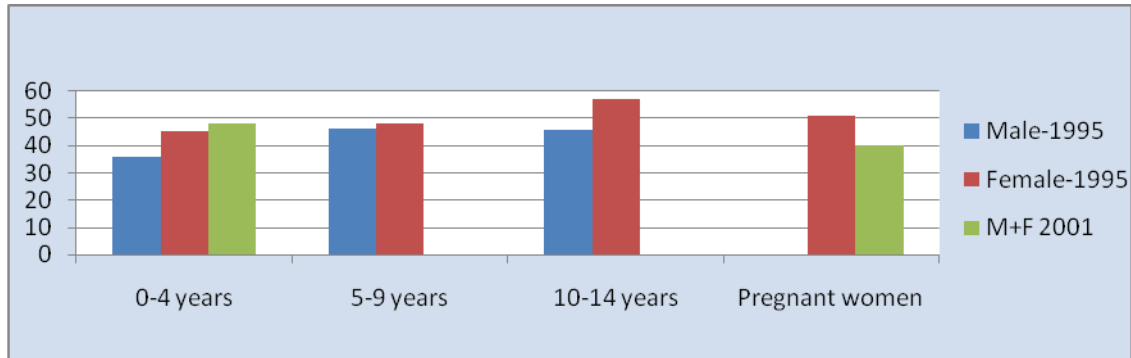
Data on iron deficiency anemia among school-age children in Indonesia are limited. The National Health and Household Surveys (NHHS) in 1995 and 2001 provide some evidence of the extent of deficiency and progress made in addressing this deficiency. As shown in Figure 9, anemia affected about half the population of school age children (5-9 years) and (10-14 years) in 1995, and a slightly lower proportion of children 0-4 years; the latter group ranged from 36 to 45 percent affected. In 2001, data are only available on children 0-4 years; the proportion of deficient children increased to 48 percent. A decline in the proportion of anemic adults in the 15-44 years age-group from about 50 percent in 1995 to about 30 to 40 percent in 2001 is attributed to iron supplementation programs for pregnant women.

Results from baseline surveys conducted to monitor the impact of deworming and iron supplementation programs also suggest that anemia is significant and has not declined in the school-age population. A survey by Mercy Corps in 2005 found rates of 55 percent. Another small survey by YKB covering 210 primary schools in Jakarta and Bekasi showed initial anemia rates of 20 to 35 percent.<sup>22</sup>

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<sup>22</sup> Unpublished Reports from Mercy Corps and YKB

**Figure 9: Rates of Iron Deficiency Anemia, by age, gender and over time**



Source: NHHS, 1995, 2001; adapted from Atmarita, 2005

*Iodine Deficiency*

The overall goiter prevalence rate, the marker for iodine deficiency disorders, has declined from 30 percent in 1980 to 11 percent in 2003 in large part due to the success of efforts to ensure the availability of iodized salt.<sup>23</sup> The national iodized salt coverage rate in 2001 was about 82 percent and data showed about 58 percent of the districts with coverage rates of 90 percent or higher. However, in some districts coverage was only at 13 percent. The use of iodized salt nationally in 2001 was 66 percent but again district level results showed district-level use of iodized salt varied significantly from 9 to 100 percent with 21 percent of districts reporting adequate household consumption rates below 50 percent.<sup>24</sup> Recent province-level data show that the coverage of iodized salt remains inadequate in many areas. Less than 50 percent of households in nine provinces and less than 80 percent in more than half of the provinces have adequate iodized salt (see map 1 below). At a minimum, this reflects a lack of progress in achieving universal consumption of iodized salt if not reflecting a decline in consumption. School-age children would be equally affected as other family members by a lack of iodized salt in the household.

**Map 1**



<sup>23</sup> National IDD Evaluation survey 2003, cited in Atmarita, 2005

<sup>24</sup> SUSENAS 2001 data cited in Semba et al., 2008

## Sensory impairment

Vision and hearing deficits can impact significantly on a child's capacity to learn and thus are important issues to be identified and addressed in school children. No information is readily available on the problem of hearing deficits and limited data are available on vision and eye problems. The tool for assessing vision of children over six years of age is the Snellen chart. Data indicate that low vision (20/60) ranges from approximately 2 to 10 percent and less than 20/60 from .3 to 2.6 percent across the provinces. On average about 5 percent of children show evidence of low vision and 1 percent have more seriously impaired vision.<sup>25</sup>

## Water and Sanitation

Children spend a significant amount of time in and around their schools and appropriate facilities at school can encourage or discourage attendance. Girls, in particular, may choose not to go to school rather than have to deal with inadequate facilities. When a school lacks access to a basic water supply and sanitation facilities and its students have poor hygiene habits, the incidence of major childhood illnesses increases adversely affecting school children's participation and learning capacity. The unsanitary conditions typical of many school toilets also send children the wrong message about the importance of sanitation. Ensuring clean water and appropriate sanitary facilities in schools can be especially effective in reducing the incidence of diarrhea and intestinal helminth infections.

Much more progress is needed in Indonesia both in improving access to clean drinking water and improved sanitation. Indonesia particularly lags behind in access to improved sanitation with only 52 percent of the population having access. Although 80 percent have access to clean water, relative to other countries in the region, Indonesia still ranks low on this indicator (see Table 5). Rates of access to clean water and adequate sanitation at schools are unknown; however, qualitative surveys confirm that conditions in rural schools are worse than urban schools. Unlike rural schools, urban schools tend to have sanitation facilities but often they are insufficient and unhygienic.

**Table 5: Access to Clean Water and Sanitation—Cross Country Comparison (WHO, 2009)**

| Country     | Access to improved Drinking Water (%) | Access to improved Sanitation (%) |
|-------------|---------------------------------------|-----------------------------------|
| Indonesia   | 80                                    | 52                                |
| Thailand    | 98                                    | 96                                |
| Sri Lanka   | 82                                    | 86                                |
| China       | 88                                    | 65                                |
| Viet Nam    | 92                                    | 65                                |
| Philippines | 93                                    | 78                                |
| Cambodia    | 65                                    | 28                                |

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<sup>25</sup> Riskesdas, December 2008

## Potential Gains from Improving School-Age Health and Nutrition

A country's education and economic status is closely linked to its health status: improve nutrition and health and education and the economy will be strengthened. Bettering nutrition and health among the school-aged, like the critical effort to improve nutrition and health among infants, is a strategic element in the effort to develop the community. In short, healthier and better nourished children stay in school longer, learn more, and become healthier and more productive adults. Addressing nutrition and health among school-age children does more than improve the health and learning capacity of the treatment group; it also brings intergenerational nutrition and health benefits and long-term economic gains as well. Girls who stay in school longer tend to delay childbearing longer than school-leavers, and merely delaying childbearing brings the intergenerational benefits of a lowered birth rate, better birth outcomes, and better child health. And, as noted, school-age children with lower levels of disease reduce the overall transmission of disease in the wider community. The gain from improving health and nutrition at school age is a combination of all of these benefits, to health, education, in the short-term and the long-term/future.

### Education Sector

The education sector in Indonesia is the fourth largest in the world with over 40 million students, 2.6 million teachers and more than 200,000 schools. Two ministries are responsible for managing the education sector, the Ministry of National Education (MoNE) and the Ministry of Religious Affairs (MoRA). Private schools are also an important part of the education system in Indonesia especially at the junior secondary and senior secondary levels where they account for 56 and 67 percent of the system, respectively. The Islamic sub-sector delivers basic education services through *madrasah* and *pesantren* (*madrasah* with boarding facilities). There are about 40,000 *madrasah* in Indonesia registered under MoRA, of which 4,000 are state-owned. Together these accommodate about six million school-age children. There is a high level of female participation in Islamic schools (more than 50%). Many *madrasah* are supported by poorer communities and the great majority of parents who send their children to *madrasah* live below the poverty line.<sup>26</sup>

Responsibility for delivery of public primary and public secondary education is shared between central, province, district and sub-district, with a critical role held by district governments. Policy, strategy and standard setting are concentrated at the national level; the provinces are responsible for planning and quality assurance; the districts manage the resources and delivery of education. As decentralization has evolved, provincial and district governments have been given increasing responsibility for delivering education that addresses local needs.

### Key Education Indicators

#### *Enrollment*

Net primary enrollment rates have increased significantly from 72 percent in 1975 to 94.9 percent in 2007. Net enrollment for junior secondary rose even more quickly starting at a low level, 18 percent in

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<sup>26</sup> World Bank, 2008

the 1970s and rising to 71.6 percent in 2007. Enrollment in senior secondary has been rising much more slowly with net enrollment at 50.19 percent in 2007. It is estimated that about 686,000 (142,000 boys; 544,000 girls) primary school children are out of school. Regional variations also exist; Papua lags significantly behind even in primary school with net enrollment at about 80 percent and about 47 percent at junior secondary. Other provinces lag behind the national average at junior secondary level including Maluku, NTT (both at 47%) and Gorontalo (52%).<sup>27</sup>

**Table 6: Basic Education Statistics**

|   |         |                     |         |
|---|---------|---------------------|---------|
| <b>Total Number of Students</b>           |         | <b>46.5 million</b> |         |
| <b>Total Number of Teachers</b>           |         | 2.78 million        |         |
| <b>Total Number of Schools</b>            |         | 258,047 (16% MoRA)  |         |
|   | Total   | Male                | Female  |
| <b>Primary net enrollment (2006)</b>      | 95.4%   | 97.1%               | 93.7%   |
| <b>Primary completion rate (2006)</b>     | 98.8%   | 98.7%               | 98.9%   |
| <b>Primary Age Children Out of School</b> | 686,000 | 142,000             | 544,000 |

Source: World Bank EdStats, based on most recent year available, 2005-2007

#### *Attendance/Participation and Progress*

These relatively favorable enrollment statistics mask some of the realities of the education sector. While data are not readily available at national or district levels, enrollment does not necessarily mean regular attendance. A recent survey aimed at examining the impact of special allowances for teachers in poor and conflict affected areas documented student absenteeism rates ranging from 4.1 percent to 26.4 percent. The level of absenteeism is influenced by socio-economic status of the area with lower status leading to higher absenteeism.<sup>28</sup> Not only do children miss school because of illness and/or because parents need them to stay home to work or take care of younger children, teacher absences also cause declines in school participation. When teachers are absent classes are not held. Teacher absences also assessed in this study found that while rates of absenteeism among teachers improved overall in 2008 (on average 14.8%) compared to 2003 (on average 20.1%) extremely high levels persist in some areas reaching 33.5 percent in Kota Pekanbaru. Thirty-six percent of teacher absences are without a clear reason. Schools with a lack of basic infrastructure including water and sanitation have had higher rates of teacher absenteeism<sup>29</sup>

Despite progress in the transition from primary to junior secondary school, only about 55 percent of children from low-income families are enrolled in junior secondary schools. Province-level data on

<sup>27</sup> Data from Susenas 2006 and MoNE 2006-07 cited in World Bank project document BOS-KITA

<sup>28</sup> Toyamah, et al., The SMERU Research Institute, April 2009

<sup>29</sup> Ibid.



prepares girls for pregnancy, childbirth, and motherhood. Ensuring that girls are well nourished and healthy—especially regarding their increased needs for iron and for growth before the reproductive years begin—will decrease the incidence of low birth weight and birth defects in their children and will reduce their risk of dying during childbirth. Schools can provide the infrastructure to easily reach girls with high priority education and health and nutrition services.

Many of the risks of adolescence (see Table 7) are universal—smoking, alcohol, reproductive and sexual health, including HIV/AIDS, etc.—and young people must have access to information and skills to be able to protect themselves from high risk behaviors. Schools may offer one of the best venues for reaching all young people with the information and education that will help them lead healthier and safer lives. In addition, schools are also the best opportunity for promoting appropriate nutrition, food choices and physical activity to help prevent overweight in children. Effective promotion of key health, nutrition and physical activity practices is crucial to alleviating the significant burden of overweight, obesity and non-communicable diseases.

**Table 7: Adolescent Risk Behaviors in Indonesia—Results from the WHO Global School-Based Student Health Survey, 2007**

| Students who...  | Percent |
|--|---------|
| Smoked cigarettes on one or more days in last 30 days            | 11.1    |
| Went hungry most of the time or always in last 30 days           | 5.8     |
| Had at least one drink containing alcohol in last 30 days        | 2.6     |
| Were physically attacked on one or more times in past 12 months  | 39.8    |
| Were seriously injured one or more times in last 12 months       | 45.9    |
| Never or rarely washed their hands before eating in past 30 days | 4.1     |

**Box 2: Preventing the Spread of HIV/AIDS**

Current prevalence of HIV/AIDS among adults in Indonesia is low (.16%) with the exception of Tanah Papua which has 2.4 prevalence among adults considered as a low generalized epidemic and primarily concentrated in ‘most at risk groups,’ drug users and female sex workers. But Indonesia is also experiencing the fastest growing epidemic in Asia. All 33 provinces have now reported cases of HIV/AIDS. Programmatic efforts are primarily concentrating on high risk populations. Nonetheless, prevention will be critical to staving the continued spread of the epidemic. School would offer a mechanism to mainstream HIV/AIDS prevention education to protect and prevent school-age children from becoming infected.

## Building Blocks for SHN Investment in Indonesia

### Introduction

School health and nutrition interventions are not completely unknown in Indonesia. National policies on school health have been in place since the 1950s. In the 1970s a task force for education and health was formed to implement health at the primary school level. In 1984 a school health policy and memorandum of understanding (MOU) was created that involved four ministries: Ministry of National Education, Ministry of Religious Affairs, Ministry of Health, and Ministry of Internal Affairs (now called Home Affairs). In 2003 the MOU was revised and a coordinating team was created. In addition to the UKS program, Indonesia has had different levels of experience historically and presently with a number of other elements of SHN including water and sanitation at schools, basic health center (puskesmas) and school linkages, school feeding, and other school-based health services provided through NGOs and/or corporate or other donors.



### The UKS Program

The purpose of the School Health Program, UKS is “improving the quality of education and student learning achievement by increasing healthy life skills of students and learners through creating a healthy school environment, improving knowledge, changing students’ attitudes, and maintaining health through preventing and curing diseases”<sup>30</sup> reflected in the three program pillars(see Figure 10).

**Figure 10: Three Pillars and Major Activities of the UKS Program**

| Health Education  | Health services at school   | Healthy school environment  |
|---|---|---|
| <ul style="list-style-type: none"> <li>• Integrated into curriculum</li> <li>• Training of UKS teachers</li> <li>• Little Doctors</li> <li>• Hand washing campaign</li> </ul> | <ul style="list-style-type: none"> <li>• Health check</li> <li>• Height and weight measurements</li> <li>• UKS room</li> <li>• Healthy Canteen</li> <li>• Referral to Puskesmas or Hospital</li> <li>• Immunization</li> <li>• deworming</li> <li>• iron tablets for girls</li> </ul> | <ul style="list-style-type: none"> <li>• Hand washing facilities</li> <li>• "Greening" of school</li> <li>• Improving school toilets</li> </ul> |

<sup>30</sup> Widaningsar et al., May 2006

### Box 3: Typical School Health and Nutrition Interventions

| Category (FRESH Framework)                        | Intervention  |
|---|---|
| <b>Policies</b>                                   | <ul style="list-style-type: none"> <li>Codes of practice for teacher behavior</li> <li>Sale of foods at school</li> <li>Inclusion of special needs children</li> <li>Inclusion of pregnant girls</li> <li>Avoidance of discrimination</li> </ul>  |
| <b>School Environment</b>                         | <ul style="list-style-type: none"> <li>Access to safe water including point of use treatment</li> <li>Hand washing facilities</li> <li>Access to adequate and gender-separate sanitation facilities</li> <li>“Green” interventions—composting, recycling, etc.</li> </ul>   |
| <b>Skills-based and Behavior Change Education</b> | <ul style="list-style-type: none"> <li>Non-formal education linked to interventions, e.g., hygiene, malaria prevention</li> <li>Curriculum-based education linked to specific interventions</li> <li>Behavior-centered education focused on adolescent risk behaviors</li> <li>Behavior-centered nutrition and physical activity education</li> </ul> |
| <b>Health and Nutrition Services</b>              | <ul style="list-style-type: none"> <li>Deworming</li> <li>Treatment for malaria</li> <li>Micronutrient (iron) supplementation or point of use fortification</li> <li>First-aid kits</li> <li>School meals or snacks (fortified)</li> <li>Referral to health center services</li> <li>Counseling or psychosocial support</li> </ul>                    |

Source: Adapted from Bundy et al., 2006

### Institutional Structure of UKS

A UKS coordinating board with representatives from Ministries of National Education, Health, Religious Affairs and Home Affairs who are included in the national MOU exists at national, provincial, district and sub-district levels. The presumption is that the four ministries meet and make decisions as a team, but it is uncertain how consistently this occurs. At the school level the headmaster and one or more UKS teacher/“gurus” are appointed to oversee UKS activities in the school. The school is expected to collaborate with health center staff to implement some of the UKS activities. The central level, primarily through the MoNE, plays a role in setting standards, providing guidelines and establishing expectations for the UKS program. In addition, the national level utilizes resources to conduct annual UKS competitions and a national UKS meeting every other year that brings together national, provincial, and district-level personnel, teachers and students. These meetings are intended to identify priorities for the coming year of UKS programming. In some instances UKS at the central level UKS provides support and technical assistance for targeted activities at school.

## Strengths and Weaknesses of UKS

Despite the creation of the UKS program in Indonesia many decades ago, remarkably little data and information are available on the investment in the UKS program at any level—central, district, sub-district, school—or the impact of its programs and activities. No evaluations are available and no consistent monitoring system is in place. Based on discussions with key informants and observations at a number of schools which might be considered “model” UKS programs, some preliminary conclusions can be drawn.

- UKS appears to be most known for its role as a school-based program that provides a place/room for children to go if they become sick at school or need first aid. The UKS room or space in the school is considered an essential first step to be considered a UKS school.
- UKS prioritizes providing periodic “health screening” at school which includes some form of health check up in collaboration with the nearest health center, and height and weight monitoring twice, quarterly or sometimes on a monthly basis. Child health and growth cards are used for the growth monitoring and also to track immunizations and the results of the health checks.
- The UKS “kader” and/or “little doctor” (the name and tasks depend on the school level, primary or junior secondary program) is another key program element. It ensures the involvement of students/children in the school health activities. To become a “kader” or “little doctor” appears to be a competitive process in most schools.
- Records of the provision of health services (deworming, iodine capsule distribution, iron supplementation for menstruating girls, or other) provided through schools are not readily available although some schools reported that these services were provided by the health center at the school.
- Many of the schools with a UKS program have hand washing facilities (most with soap) and clean, and at times, a sufficient number of toilets. Hygiene promotion was a standard activity in the schools. Numerous materials including posters and instructional materials have been created to help raise awareness and increase knowledge about these topics (see more on water and sanitation below).

### **Box 4: Improving School Canteens**

Initiated in 2009, the UKS (central level) is supporting the improvement of school canteens through block grants to schools and training activities. To be considered for a block grant, schools must already have functioning canteens since no infrastructure is provided under the program. 288 schools across 33 provinces and 36 districts—112 primary, 90 junior secondary, and 86 senior secondary—are receiving the equivalent of approximately \$1,000 for one year. In addition to the grant, the central level of MoNE is providing technical assistance and training to these same schools to raise their capacity to create safer and healthier school canteens. Food safety test kits and healthy school canteen educational materials have been distributed to these schools as part of this initiative.

As a national program implemented within a decentralized system, what happens under the UKS program in one district may look very different than what is supported in another if a UKS program exists at all. At the province and district level the resources devoted to UKS are dependent on the commitment of local legislative and decision-making bodies. In some areas these resources are not insignificant.

Given some of the primary activities promoted by the UKS program—a traditional school health approach requiring a health room, school canteen, and other infrastructure in place—UKS appears to be more relevant to better-off schools and districts. The major incentive from the central level is the national level “competition” that rewards the “best” UKS schools. The instrument used to select the winning schools is made up of indicators that are primarily related to the facility—latrines, health room, etc. Other activities such as the national jamboree and national-level meetings require a financial commitment from districts that may be more difficult to meet in lower-resourced areas or those where there is more competition for resources because of greater overall health, nutrition and other school needs. These factors suggests that rather than “leveling the playing field” through school health, the UKS program may actually increase school inequity by directing what resources are invested in school health via UKS toward better-off communities and schools.

### Water and Sanitation in Schools

The minimum level of services<sup>31</sup> (Standar Pelayanan Minimal/SPM) for schools includes standards for a clean water supply and adequate sanitation facilities—hand washing facilities and toilets. Several efforts are underway under the auspices of different donor institutions and the Ministry of Health and the Ministry of National Education to improve the water and sanitation environment at schools (see Table 8). A network for environmental sanitation and clean water at schools is being established to help coordinate implementation of various activities and programs.

**Table 8: Illustrative School Water and Sanitation Initiatives**

| Institution                           | Projects/Activities  |
|---------------------------------------|--|
| <b>Ministry of National Education</b> | School sanitation program part of UKS  |
| <b>Ministry of Health</b>             | School hygiene and sanitation program; preparing guidelines for school sanitation  |
| <b>UNICEF</b>                         | School Sanitation and Hygiene Education (SSPH)   |
| <b>USAID</b>                          | Environmental Services Project-- improved water resources management; expanded access to clean water and sanitation services |
| <b>IRD</b>                            | Yogya Emergency Response Program for Promotion of Hygiene and Sanitation at SD/MI  |
| <b>Plan Indonesia</b>                 | Promotion of Child Friendly School and FRESH Framework   |

<sup>31</sup> The minimum level of services is still in draft

### Basic Health Center/Puskesmas and Schools

The School Immunization Program—Bulan Imunisasi Anak Sekolah (BIAS) represents perhaps the most consistent and effective health center—school linked service provision. Introduced in 1998 initially as a long-term control of tetanus by providing life-long immunity to all primary school graduates and diphtheria boosters, the BIAS program was integrated within the existing UKS structure. In practice, UKS does not appear to play a major role in implementation. The responsibility for the BIAS program is through Expanded Program on Immunization (EPI) and health workers work directly with schools without UKS support. In some cases the UKS structure might have been helpful for the BIAS program, but it does not appear crucial to the operation of BIAS.<sup>32</sup>

### School Feeding

The MoHA maintains a department responsible for school feeding although resources for programs now need to be allocated by the district so the central role is limited and uncertain. In the past, prior to decentralization, school feeding was a major program under BAPPENAS.

In 2009 school feeding continues under the auspices of WFP. Through a combination of private sector and WFP resources, WFP is reaching more than 200,000 children in more than 1000 schools in the provinces of NTB, NTT and East Java. Until recently several nonprofit organizations including Mercy Corps and IRD among others provided school feeding through USDA resources. The approach to school feeding has included the provision of in-school meals through local production (resources were sent from central to district level to finance locally supplied programs), and the distribution of biscuits/snacks as well as some other commodity programs including milk distribution and eggs.

### Private-sector and NGO-Supported School-Based Services

Several non-profit organizations have carried out relatively small-scale deworming and iron supplementation programs in various regions of the country. The national level YKB NGO has supported a school-based deworming and iron supplementation along with health promotion activities for the past 20 years in and around Jakarta. They have recently expanded to some additional areas and reach more than 700 schools. Deworming interventions were also conducted in conjunction with the school feeding programs supported by Mercy Corps, IRD and other non-profit organizations. Overall, however deworming and micronutrient supplementation has not been a major school-based activity in Indonesia.

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<sup>32</sup> School Immunization in Indonesia, unpublished report, JSI/Immunization BASICS

## Recommendations and Next Steps

The evidence in this report suggests that the health and nutrition status of school-age children in Indonesia are likely to be important factors in the achievement of “education for all” and MDG goals. The messages are clear: health and success in school are inextricably connected. If students are not healthy and well-nourished schools cannot achieve their primary mission of providing effective, efficient and equitable education. The interventions to address some of the major health and nutrition impediments to learning are highly cost-effective and benefit the poor and disadvantaged children more than other education interventions while also reducing gender inequities.

Not only does SHN play a role in achieving education objectives, but school-based health and nutrition interventions are important for health sector goals. For some diseases and deficiencies, school-age children contribute significantly to the overall burden of disease (e.g., intestinal helminth infection, iron deficiency). Effective school-based programs are also crucial to helping children develop healthful practices and avoid risky behaviors related to both the continued burden of communicable and the rising burden of non-communicable diseases in Indonesia. Education attainment is closely linked to future health, especially among girls as their health and nutrition status and their skills and practices have a direct and indirect impact on the health and nutrition of future generations.

The government of Indonesia (GOI) with support from a wide range of donors and partners has made education a top priority. A centerpiece of that support is the BOS (Bantuan Operasional Sekolah or School Operational Assistance) program that has been disbursing block grants to school across the country on a per student basis since 2005. BOS is part of the Government’s effort to improve access to quality education to students at all income levels. BOS operational funds are eligible to be used for extracurricular activities that could contribute to the physical health of students.

The World Bank is supporting the BOS program through BOS KITA (School Operational Assistance—Knowledge Improvement for Transparency and Accountability), a project which aims to improve access to quality education for all children ages 7 to 15 by working to strengthen school committees, increase community participation, improve fiduciary arrangements for greater transparency and accountability of the BOS program to consequently better utilize current BOS funds. The loan project total is \$600 million for 2008-2010, and this project is supplemented by additional support under the Dutch Education Trust Fund.<sup>33</sup>

The GOI has also provided a framework for National Standards for Education to support the decentralization process. SISWA (System Improvement through Sector Wide Approaches) a new basic education development framework being created in conjunction with the medium term sector plan (2010-14) covers key strategies and programs to improve access and quality of basic education under the Ministry of National Education, Ministry of Religious Affairs, and the Ministry of Home Affairs. It is intended to provide a coherent policy framework for donor support. One of the key areas of focus under

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<sup>33</sup> BOS Kita (School Operational Assistance—Knowledge Improvement for Transparency and Accountability); Dutch Trust Fund documentation

SISWA is to help districts in part through providing access to better and more information on how to improve education.

Within these efforts to improve the quality and equity of education, school child health and nutrition has not figured significantly. So far, the focus appears to be more school and classroom- rather than child-focused. The standards for minimum services in basic education include expectations for a clean water supply and hand washing and appropriate and adequate toilet facilities at all schools. The potential for national, district and community-level policies and actions in school health and nutrition to significantly contribute to improving educational and health outcomes in Indonesia however remains to be fully exploited.

### Recommendations

The considerable commitment of the GOI and its partners to improving the quality and effectiveness of basic education in Indonesia provides an excellent platform on which to redirect and increase the investment in school health and nutrition. The situational analysis of school health and nutrition documented in this report points to the following major conclusions that should guide the next steps toward an enhanced SHN program.

- 1. Target SHN interventions where education outcomes are low and health insults and poor nutrition status or hunger are high**—For the biggest “bang for the buck” the investment made in SHN programs must give high priority to those districts and schools where health and nutrition are inhibiting access, participation and progression in school, especially among girls. If effectively targeted, SHN interventions have the potential to help reach some of five percent who are currently un-enrolled in school and those who are not participating fully. SHN must be understood and monitored and evaluated as an educational intervention first.
- 2. Strengthen collaboration within the education sector between MoNE and MoRA and between education and health ministries**—SHN is aimed first and foremost at helping to achieve education goals, and the Ministry of National Education and Ministry of Religious Affairs appropriately should continue to take the lead in SHN. These two ministries need to work together in SHN as well as in collaboration with the health sector since the interventions require health sector guidance and support. The education and health sector collaboration is most essential at the local and school level but also important at higher levels. Given the important role of the Ministry of Home Affairs in implementation of education, collaboration with this ministry will help to improve the effectiveness of SHN programming. As has been indicated, *madrasah* and *pesantren* are potential targets for SHN as students in these schools are often from the lowest income families.
- 3. Take advantage of the returns from certain low-cost SHN interventions by identifying and implementing district-level approaches to remediation**—Providing mass delivery of some SHN services (deworming, iron supplementation, treatment and prevention of malaria) at the district level may make sense if these problems affect a large proportion of the school-age population in a certain area/district. This approach could offer some benefits in terms of economies of scale for training, technical support, etc. as well as quick and significant returns for a limited investment.

4. **Identify and develop a set of “packages/models” that take into account the three main contexts in Indonesia, urban, rural, island/coastal and also the type of school (e.g., boarding)**—The FRESH framework for SHN provides overall guidance for the type of intervention that is most effective in achieving specific outcomes related to health, nutrition and education. While context matters, to simplify and maximize the opportunity to achieve scale in implementing SHN interventions, a set of “model” SHN programs can be developed that will account for the main contextual variations in communities and schools in Indonesia.
5. **Continue and expand on the current efforts to ensure clean water and adequate sanitation at all schools**—Water and sanitation at school is one of the key elements of the FRESH framework. The fact that this is already a priority for the education sector given the minimum education standards bodes well for generating support for these SHN interventions. That said, where school infrastructure is weakest, meeting clean water and sanitation standards at schools may be most difficult to achieve but SHN investment should be focused on those “neediest” schools. Support for long-term solutions to water and sanitation at schools should be complemented by alternative technologies for ensuring clean water (e.g., purification) and low-cost latrines.
6. **Improve the quality of health education/behavior focused communications**—Health, hygiene, nutrition and other education is required to promote practices linked to school-based services, including the use of clean water, hand washing facilities and latrines, as well as for the development of other behaviors among school children. Strategies for developing effective messages and materials are available but require an investment in technical and other expertise to put in place. As with any intervention, education for health promotion and/or behavior change needs to be monitored and evaluated to ensure that the desired outcomes are achieved.
7. **Develop separate model (or models) for stemming the tide of the overweight and obesity**—Although not directly related to education, the seriousness of the increase in the issue of overweight in children in Indonesia suggests that strategies to promote appropriate nutrition and physical activity practices should be an element of SHN in some contexts. As mentioned above, any approaches that entail promotion or education must be developed with appropriate technical and other expertise and be monitored and evaluated for effectiveness.

### Next Steps

A number of opportunities may exist for beginning to act on these recommendations. Some preliminary thoughts on where to start are presented below.

- Utilize on-going “good practices in basic education” mechanisms to identify local private sector, NGO and/or government-supported school-based health and nutrition interventions/programs that offer potential for creating context-specific “good practice models” for SHN. Document and package these “good practices” linked to specific contexts. These “good practices” could be at the district, sub-district or school level and should be directly linked (with concrete evidence where possible) with improving the quality of education in the most disadvantaged schools.

- Create a SHN “tool kit” and training modules building off of the “good practice” and international experience. The tool kit would be for use at the district and school level to raise awareness and build capacity in identifying and addressing health and nutrition needs among school-age children in different contexts. The tool kit and modules would be introduced through a district-level training strategy. One module in the tool kit should address the need for a simple set of indicators to use at the school, district and province level to guide progress in SHN programming.
- Conduct an in-depth institutional capacity assessment at various levels including national, district, sub-district and school to identify approaches to and needs for capacity building to support additional promotion and implementation of school health and nutrition interventions.

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Agency.

## Appendix 1: List of Provinces

| Abbreviation | Name of Province          |
|--------------|---------------------------|
| Ache         | Nanggroe Aceh Darussalam  |
| Sulut        | Sulawesi Utara            |
| Sumbar       | Sumatera Barat            |
| Riau         | Riau                      |
| Jambi        | Jambi                     |
| Sulsel       | Sulawesi Selatan          |
| Bengk        | Bengkulu                  |
| Lampung      | Lampung                   |
| Babel        | Kepulauan Bangka Belitung |
| Kepri        | Kepulauan Riau            |
| Jakarta      | DKI Jakarta               |
| Jabar        | Jawa Barat                |
| Jateng       | Jawa Tengah               |
| Yogya        | D I Yogyakarta            |
| Jatim        | Jawa Timur                |
| Banten       | Banten                    |
| Bali         | Bali                      |
| NTB          | Nusa Tenggara Barat       |
| NTT          | Nusa Tenggara Timur       |
| Kalbar       | Kalimantan Barat          |
| Kalteng      | Kalimantan Tengah         |
| Kalsel       | Kalimantan Selatan        |
| Kaltim       | Kalimantan Timur          |
| Sumut        | Sumatera Utara            |
| Sulteng      | Sulawesi Tengah           |
| Sumsel       | Sumatera Selatan          |
| Sultra       | Sulawesi Tenggara         |
| Goron        | Gorontalo                 |
| Sulbar       | Sulawesi Barat            |
| Maluku       | Maluku                    |
| Malut        | Maluku Utara              |
| Pabar        | Papua Barat               |
| Papua        | Papua                     |