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The GIRLS study is a collaboration among the Department of Health of Indonesia, Opportunities for Micronutrient Interventions (OMNI), the United States Agency for International Development (USAID), Fatayat Nahdlatul Ulama and Helen Keller International.

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Iron-deficiency anemia is the most prevalent nutrition deficiency in Indonesia, especially among pregnant women, infants, and women of reproductive age. Currently, iron supplements are distributed to pregnant women, female factory workers, and infants in less developed villages in Eastern Indonesia. Another micronutrient deficiency in Indonesia is vitamin A deficiency. While blindness due to vitamin A deficiency is no longer a public health problem, subclinical vitamin A deficiency, which increases the risk of mortality and the severity of illnesses, still exists. Strategies currently used to improve the vitamin A status of the population include distribution of high-dose vitamin A capsules to children (aged 1 to 5 years old) and women (within one month after delivery), fortification of foods such as noodles, and promotion of food diversification.

While these strategies reach a large proportion of the population, there are some groups, such as pregnant women, whose micronutrient requirements are relatively high, compared to their currently possible intake, including supplements. One way to ensure that women start pregnancy with a better iron and vitamin A status is to supplement them during adolescence, before the start of their reproductive life. This will benefit them as well as their future offspring.

In July 1996, the school-based GIRLS project for improving the vitamin A and iron status of adolescent girls was started in East Java, Indonesia. Different strategies are being implemented as part of the project: weekly supplementation with iron and/or vitamin A, dietary supplementation and nutrition education, and deworming medication is given to half of the groups. Apart from the adolescent girls, the boys at school are also enrolled in the activities of the programme.

This report describes the progress of the project in the period October 1996 – April 1997 as well as the results of the baseline data collection. Very interesting information was obtained on food consumption practices, vitamin A intake and its sources, physical fitness, parental education and hemoglobin concentrations among girls as well as boys and in rural as well as urban areas.

Further monitoring of the GIRLS project will provide vital information about feasibility as well as possible impact of school-based programmes for improving the health of adolescent girls.

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girls

Gizi:

Intervensi kepada
Remaja
Lokal di
Sekolah



The GIRLS study began in October 1996 and has recently completed its second round of data collection. The project is designed to assess the impact of various strategies to improve iron and vitamin A nutriture in female adolescents, but it also serves the long-term goal of improving reproductive health by improving micronutrient deficiencies through early intervention.

To assess the impact of the interventions, data is collected at the start of the project (baseline), six months into the project (midterm), and after the project (post-intervention). Both quantitative and qualitative data is collected at baseline and post-intervention, while only quantitative data is collected at midterm.

The baseline survey was conducted between October and December 1996 and some of the results have been compiled for this report.

LOCATION

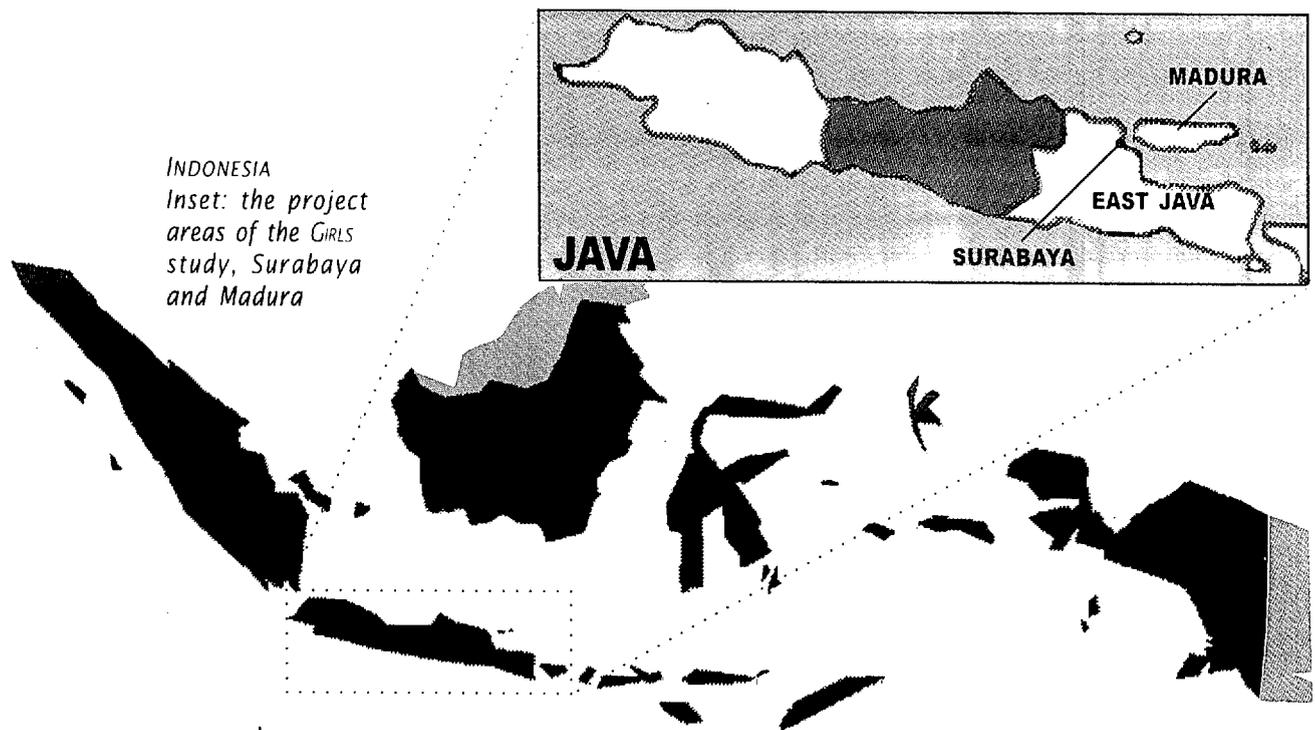
The GIRLS study is being conducted in Surabaya and Madura, both in the East Java province of Indonesia, through the school system. It encompasses both state-run and private schools, including *pondok pesantren*

(Islamic boarding school) in Madura. Although adolescent girls are the focus of the study, the school setting automatically means the study population consists not only of girls, but also of the boys in these schools.

The study involves three different types of interventions: supplementation, dietary approach and education. There are three different types of supplementation, for those who are selected for this interven-

introduction

[The GIRLS study] serves the long-term goal of improving reproductive health by improving micronutrient deficiencies through early intervention.



INDONESIA
Inset: the project areas of the GIRLS study, Surabaya and Madura

tion: vitamin A alone, iron alone, and vitamin A combined with iron. The intervention groups and a control group, are divided among the schools, and the three interventions are randomized among the grades.

INTERVENTION

Adolescents are relatively easy to access (through schools), VAD is already prevalent among this age group, they are subject to fewer cultural constraints and food taboos . . .

Growing evidence indicates that enhancing iron and vitamin A intake among populations deficient in these micronutrients can result in improved growth and development. Women with adequate iron levels are less likely to have low-birthweight babies or undergo premature delivery, and they tend to be more economically productive.

Targeting female adolescents is an additional way of assuring the adequate nutritional status of pregnant women, including the

prevention of low birthweight, control of anemia and VAD. It also benefits the adolescents themselves

Adolescents are relatively easy to access (through schools), VAD is already prevalent among this age group, they are subject to fewer cultural constraints and food taboos than pregnant women, and, from a rational point of view, the best way to reduce problems in pregnancy is to intervene before reproduction.

However, it is certain that different approaches are needed for rural and urban communities, as underlying causal factors as well as the availability and utilization of health services and educational facilities will vary within the country.

ADOLESCENCE

The pubertal growth spurt is the period of most rapid growth, after infancy, that humans experience. Adolescents have unique nutritional needs from the biological, psychological and social points of view.

Their diet must contain larger amounts of protective nutrients per unit of energy consumed than the diets of prepubertal children and adults.

Changes in physiological function after sexual maturity also alter nutrient needs, as illustrated by the increase in a girl's requirement for iron after her first menstruation (the menarche) as a result of menstrual blood loss.

Physical growth during adolescence consists of pubescence, during which linear growth is rapid, and a later and slower period of growth after the menarche or adrenarche is reached.

QUALITATIVE RESEARCH

There is limited information on adolescents' perceptions of service providers in general.

As this project has many service-delivery components, it is very important to learn about the perceptions of the adolescents.

Hence, apart from the interventions and nutritional surveillance conducted as part of the GIRLS study, qualitative research is currently being undertaken to learn more about this under-researched age group.

Preliminary results of the baseline survey

The GIRLS study is being conducted in 34 schools in urban (Surabaya) and rural (Madura) East Java. The total study population is 6,582 adolescents (aged 12 to 15 years), attending various junior high schools (SMP, SMP-K, MT)* and Islamic boarding schools (PP)*.

Although the GIRLS study primarily focuses on the prevalence and severity of anemia in school girls, it also encompasses the boys in the schools involved.

Approximately 53 per cent of the study population consists of girls, and the remaining 47 per cent are boys.

PARENTAL EDUCATION BY SCHOOL

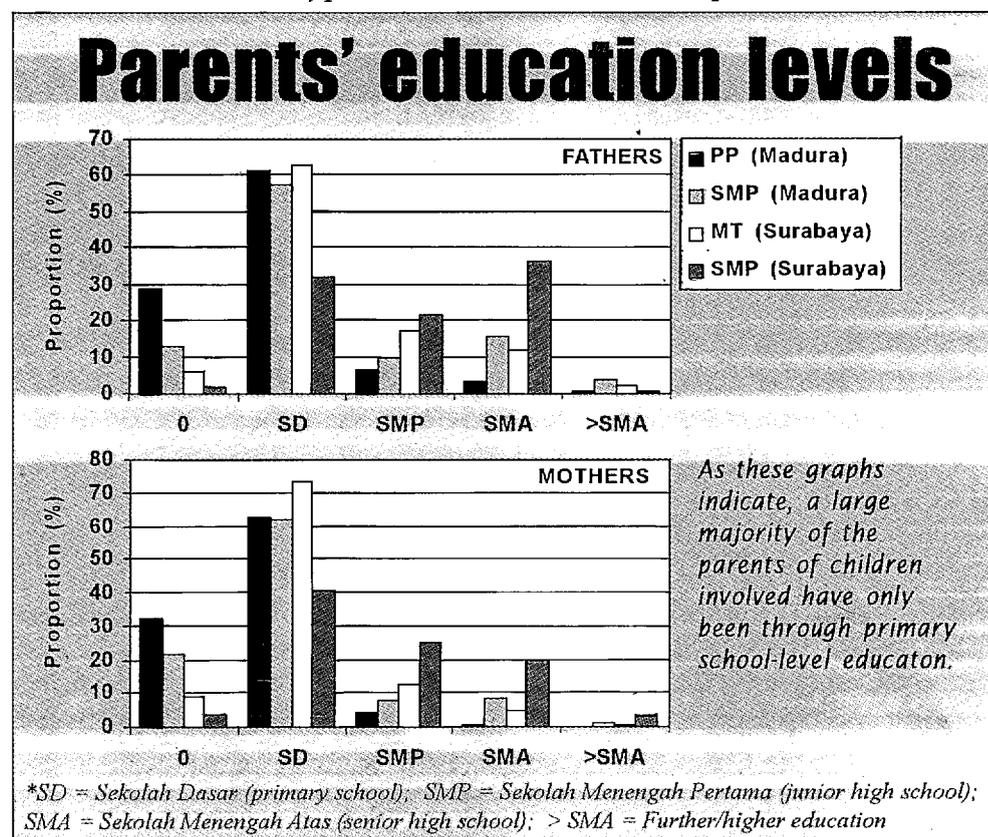
Among the parents of the adolescents in all of the four types of

schools, the survey found that the mothers are less educated than the fathers.

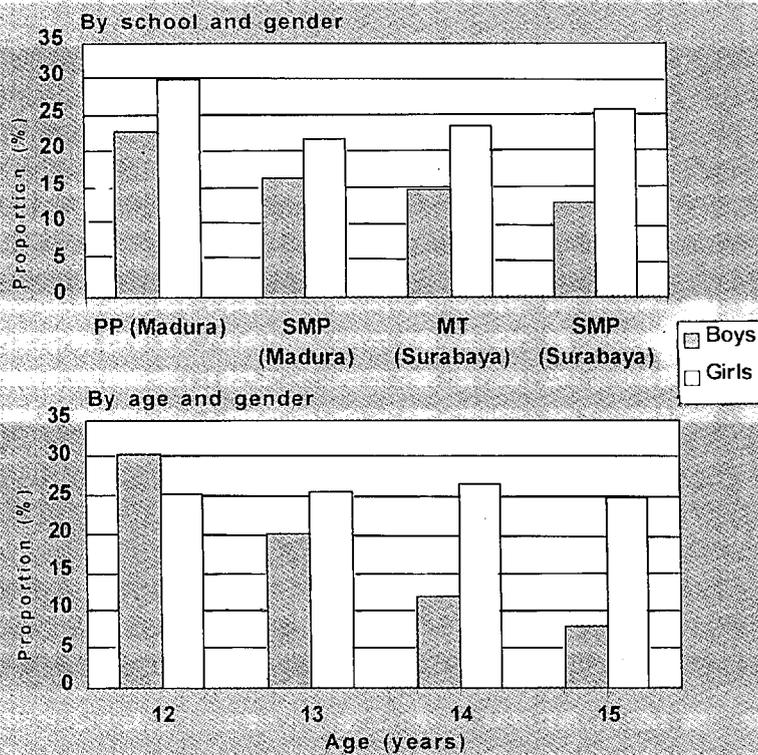
Parental education was lower in Madura than it was in Surabaya, with the lowest level among parents of children at the boarding schools (PP).

ANEMIA PREVALENCE

The baseline survey revealed that, by school and sex of the students, anemia prevalence was



Prevalence of anemia



Survey results

highest among girls in the *pondok pesantren* in Madura. In these boarding schools, 30.2 per cent of the girls and 22.8 per cent of the boys were anemic.

PUBERTY

The onset of menarche (the start of the menstrual periods) for girls and wet dreams for boys was found to be normal, with 47.8 per cent of 12-year-old girls and 37.8 per cent of boys, in the same age group, experiencing these symptoms of puberty. These figures rose consistently among the older children to include almost all the students aged 15.

As expected, girls reach puberty (almost a year) earlier than

boys, but by the age of 15, almost all boys and girls had reached puberty.

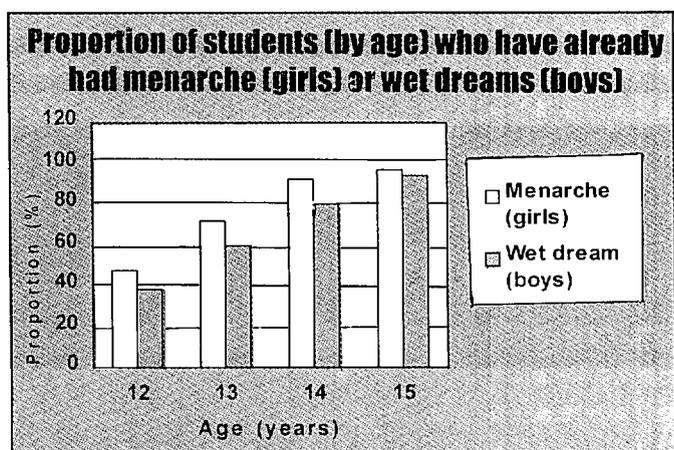
ANTHROPOMETRY BY SEX AND AGE

The differences between the sexes is explained by the normal difference in fat percentage (10% in males and 20% in females). This is also shown in the higher mean BMIS (body mass index, determined by dividing weight [kg] by height [m²], squared) by age for girls, compared to boys. The increase with age is also bigger in the girls than it is in the boys.

The increase in mean height for girls between the ages of 12 and 15 is 5.7cm, while for boys it is 14.4cm, which clearly shows the male growth spurt. Girls start out with higher weights at 12 years of age, but this situation is reversed a year later. The weight increase of the boys in this period is 12kg, while in the girls it is only 7kg. However, the smaller increase in height causes the girls' BMIS to rise, even with this smaller increase in weight.

DIARRHEA BY SCHOOLTYPE

The diarrhea prevalence was relatively low, because the children are interviewed in school, which means only children healthy enough



to attend are selected. The much higher percentage found in the boarding schools may be due to worse sanitation (some schools have a pupil/toilet ratio of up to 100:1) and also to the fact that the data collection was performed 'at their home', because even those suffering from diarrhea would still be on the premises and available for interview.

VITAMIN A INTAKE

Vitamin A (VA) intake from retinol sources (i.e. animal foods and fortified foods), mainly eggs, was found to be very high (175RE/d), compared to vitamin A intake from vegetables and fruits (80RE/d). In fact, half of those interviewed (50.1%) said they had consumed eggs less than 24 hours ago and 18.7 per cent had consumed eggs in the last three days.

If compared with mothers in Central Java, the median total vitamin A intake is the same, but the origin is very different.

Where the Central Javanese mothers had a high vegetable and low animal intake, the pupils in this study had a very low vegetable intake and a relatively high animal intake (mostly eggs).

The most plausible explanation is the difference in local diets: Traditionally, dishes in Central Java contain more vegetables than East Javanese dishes. In general, the Madurese do not like vegetables and consider them 'goat food'. (There is no word for 'green' in Madurese, hence they call the colour, 'blue'.)

Futhermore, children often eat fried eggs out of convenience, both when it is prepared for them or if they have to prepare it themselves.

It could be that the mothers in the Central Java study are better cooks than the adolescents in this study and are, therefore, able to cook other meals which happen to have a higher vitamin A content from vegetables.

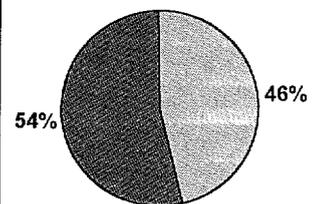
VITAMIN A INTAKE BY SCHOOL TYPE

Plant VA intake (vegetables and fruits), as opposed to animal VA intake (animal products and fortified foods) is highest in Madura, especially in the boarding schools.

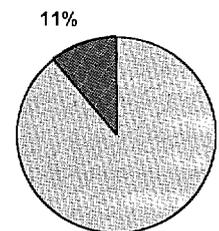
This seems to contradict the dislike for vegetables in Madura. However, this phenomena is caused by the fact that, in the boarding schools, the total intake of vitamin A is very low.

Survey results

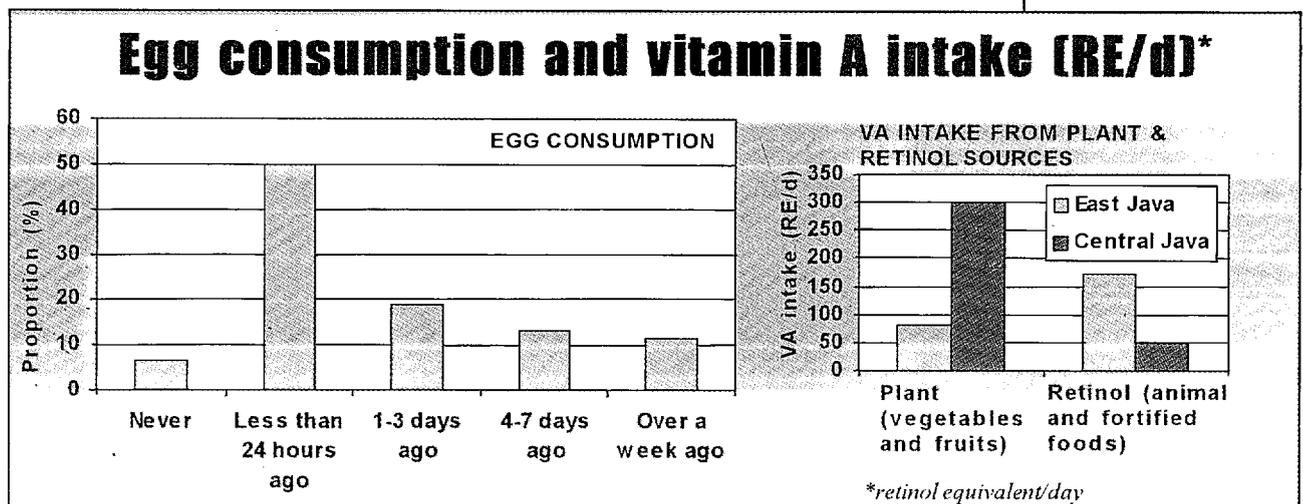
■ Plant sources
■ Retinol sources

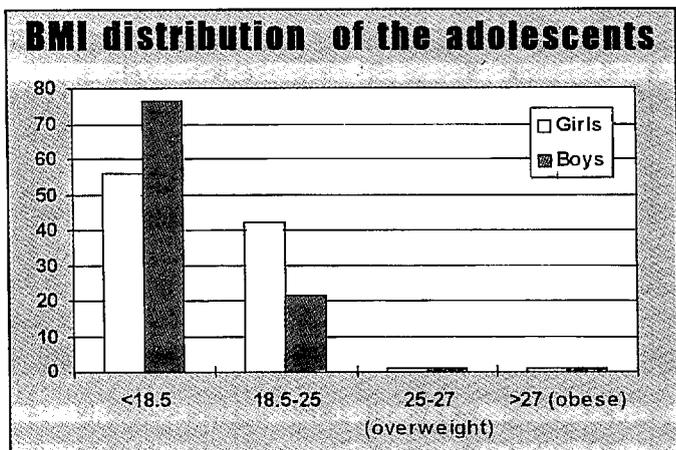
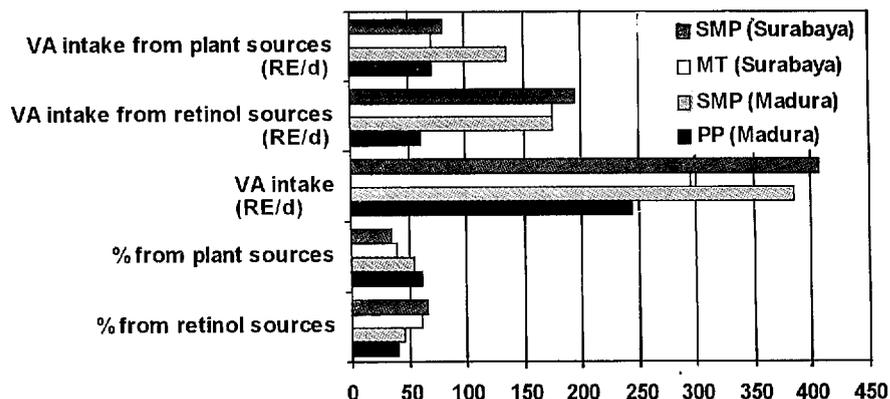


MEDIAN TOTAL VITAMIN A INTAKE IN EAST JAVA (325RE/d) AMONG HIGH SCHOOL STUDENTS

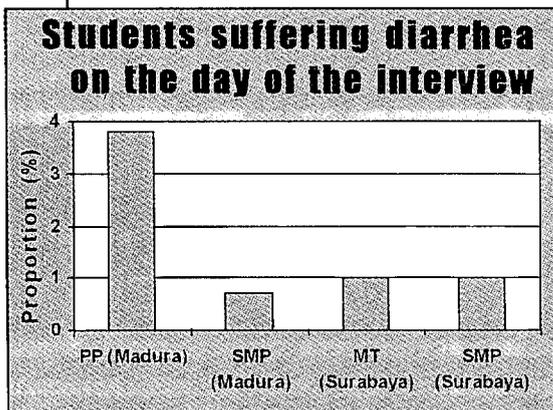


MEDIAN TOTAL VITAMIN A INTAKE IN CENTRAL JAVA (330RE/d) AMONG BREASTFEEDING WOMEN





Survey results



Physical fitness test results

	Age	Indonesian	Australian
Boys	13	7min 53sec	6min 38sec
	14	7min 39sec	6min 23sec
	15	7min 44sec	6min 10sec
Girls	13	10min 42 sec	8min 14sec
	14	11min 3sec	8min 9sec
	15	10min 52sec	8min 27sec

Pupils in religious schools (PPs and MTs) have lower total vitamin A intake than those in SMP. Two factors which influence this are parental education and attention.

The pupils in the boarding schools have to take care of themselves, which means they have to cook their own food or buy it.

While the pupils at the SMP eat at home more often, with their mothers preparing their meals, many of the parents of pupils attending MTs are small traders who leave their homes before their children have had breakfast.

Therefore, the children are left to take care of themselves without guidance, just like the students in the PPs.

The difference between the students in the PPs and those attending MTs may well be caused by the restricted availability of foodstuffs in the boarding schools, as well as lower economic status compared to MT pupils.

PHYSICAL FITNESS TEST

The distance for the physical fitness test was determined at 1.4km as this was considered an appropriate distance for this age group, while still making it possible to test aerobic metabolism. Not all schools have the use of a big sports field and therefore it was necessary to use another method to standardize the running.

For practical reasons, it was decided to let the pupils run a distance of 100m fourteen times.

This distance was measured, using a 50m-long rope, on a street or field in the neighbourhood of the school.

Postcards from the field

Two field workers were present to set out the track and record the time needed to run the 1.4km, while the sports teachers were involved to keep order.

The results of the study population are worse than those of their Australian peers, and this is especially true for girls.

Of the East Javanese boys, 23.6 per cent ended up below the fifth percentile of their Australian peers, while of the girls this percentage was 52.5 per cent. The trend to run better with increasing age, which can be seen in the Australians (especially the boys), is not as large among the East Javanese.

Possible factors influencing these differences are nutritional status, climate, cultural behaviour (including exercise), and anthropometric differences. BMI appears to have some influence: the lower the BMI, the better the result of the Cooper test. ☉

BY DAMAYANTI SOEKARJO
AND SASKIA DE PEE

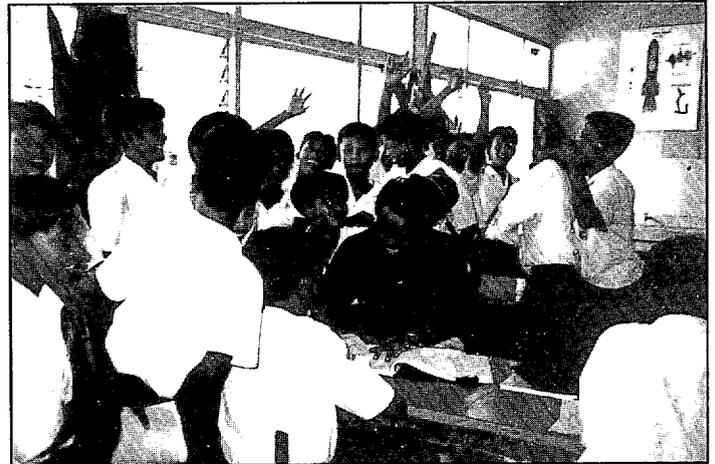
Theoretically, distribution of iron pills through schools is a convenient delivery system. In practice, however, some problems are being encountered. The iron pills need to be distributed together with water to facilitate swallowing of the pills.

Because there is no potable water supply at the schools, plastic glasses of 220 ml bottled water ("Aqua") are being given together with the pills. This, of course, causes a garbage problem in the schools.

While most children can swallow the pills with water, some can only take it together with food, for example hidden in banana, or in powdered form. These children are allowed to take the pill after school. After taking the pills, some children complain about the taste of the pills as well as about side effects such as nausea.

Part of these complaints can be anticipated and could be included in information that is provided when introducing the distribution of iron pills. Overall, providing information to teachers as well as to pupils and their parents about why iron pills are being distributed and what side effects may occur, proves to be very important. While the information was provided at the start of the project, it appears to be necessary to repeat it while the project is ongoing. Factors limiting regular provision of adequate information may include time constraints and limited knowledge, which, in turn, may affect motivation.

While side effects and the provision of adequate information have been identified as factors constraining the compliance with iron pill distribution to pregnant women, problems with swallowing the pills may also occur in pregnant women. ☉



PROJECT ACTIVITIES

1 9 9 6

October

Headmasters of schools in each project area were invited to a meeting, where they were introduced to the study and asked to participate. Twenty-one representatives attended, out of 24 schools invited.

The baseline survey of *pondok pesantren* students (in Madura) was completed. The data was collected in two and half weeks.

Blood and fecal samples were also collected from a subsample.

Data collection in the other schools was conducted in November, due to exams and vacation in the previous month.

In some schools, teachers were very cooperative and the pupils easy to handle, while in others, the lack of a separate room for conducting the data collection caused difficulties.

December

Girls project methodology: OBJECTIVES

GOALS

This project will assess the impact of various strategies of improving iron and vitamin A nutriture in female adolescents. It will serve the long-term goal of improving reproductive health by reducing micronutrient deficiencies.

More specifically, this project aims to:

- quantify the prevalence of iron and vitamin A deficiencies among female adolescents in rural and urban communities
- assess the direct causes and underlying factors, as well as the processes, which lead to quantitative and qualitative inadequacy of habitual diets of female adolescents in rural and urban communities
- assess the appropriateness of the school as a channel to address the nutritional problems of female adolescents
- test the effectiveness of several interventions for female adolescents

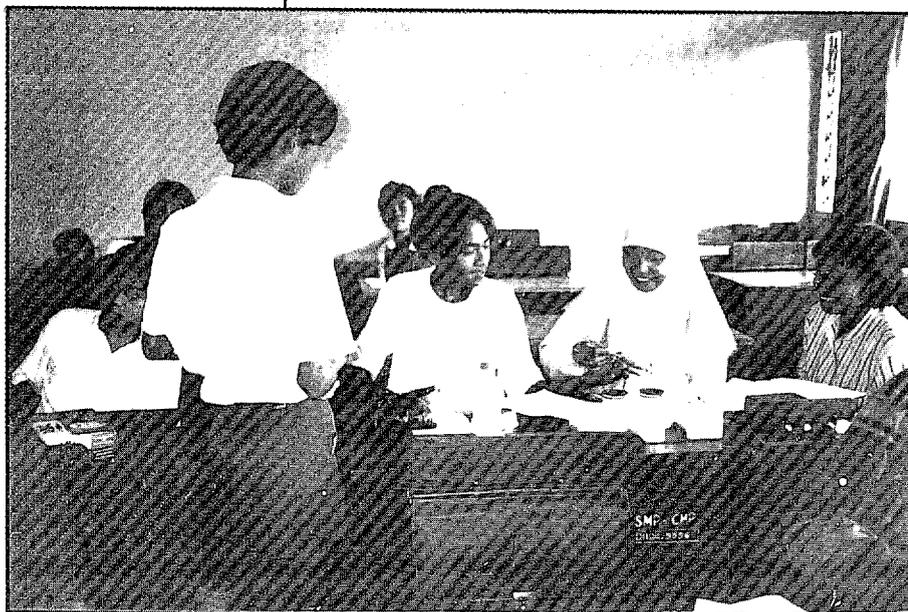
METHODOLOGY

POPULATION AND LOCATION

This intervention study is being performed in the city of Surabaya and in Madura (Bangkalan and Sampang districts), East Java.

The school system, with its nine years of compulsory education for all, provides the opportunity to reach adolescents through the school system. Both state-run and private schools (including *pondok pesantren*, or Islamic boarding schools, in Madura) are involved, and a total of 34 schools were selected. Thus, the population of the study consists of all pupils aged 12 to 15 years in the selected schools (approximately 6,500 adolescents).

Although the study is primarily focused on adolescent girls, the school setting automatically means that boys present will also join in all the activities, concerning the intervention as well as the monitoring. This provides the opportunity to obtain information on adolescent boys as well.



Left: Due to the school setting, the study population includes boys as well as girls

design & implementation

SELECTION AND INTERVENTION

SELECTION PROCESS OF SCHOOLS

Schools are selected based on:

- Number of pupils (average 250)
- Location (no two schools of the same type in one kecamatan (sub-district); urban: outskirts; rural: reachable by motorcycle)

The headmasters of 24 schools (not including the pondok pesantren) were invited to a meeting at the provincial office of the Department of Education. At the meeting, they were introduced to the study and asked to participate.

The headmasters then called a meeting with the parents of the pupils, where the study was explained, using written and visual materials. At these meetings, the parents were asked to consent to the taking of their children's blood for the purposes of the study. All the schools were included in the study.

INTERVENTIONS

The study comprises three independent interventions: supplementation, dietary approach and education.

The period of interventions lasts for a year and a half, during which day to day activities are performed by teachers and pupils in communication with, and under the supervision of, the field supervisors.

DIETARY INTERVENTION

This approach is used in the pondok pesantren only, as the nature of these schools makes them more suitable for such an intervention than regular schools. The pupils in these schools receive one free, nutritious and balanced meal a day for six consecutive months. As this is a cost-intensive intervention, this intervention is only being conducted in five schools. The meals are prepared in the school canteens, by school staff, using locally available and acceptable foods. Therefore, the canteens have been upgraded, the staff trained and the quality of the kitchen improved. The field supervisors act as supervisors and consultants, while the actual activities are performed by the school (with funding provided).

SUPPLEMENTATION

There are three different types of supplementation which are given to the pupils in this group: vitamin A alone, iron alone, and vitamin A combined with iron. These three interventions will be randomized over the grades (I, II, III) rather than the schools to minimize the effect of dropouts.

Vitamin A=1 weekly dose of 25,000IU (RDA, or recommended daily allowance, for Indonesians in this age group=3,500IU)

Iron=1 weekly dose of 60mg elemental iron combined with folate

(All supplements are taken in the presence of a field supervisor)

EDUCATION

Based on the information obtained in the qualitative data collection, Health Education Packages (HEP) will be developed, which will be suitable for the different settings: urban, rural, general and religious schools

The packages are aimed at developing awareness of the importance of micronutrients and will take the form of short (one-week) courses/projects incorporated into the school health system, UKS (Usaha Kesehatan Sekolah).

This intervention will only be launched after the 1997 Indonesian elections and preferably in the new academic year (1997-98).

PLACEBO GROUP

The pupils in this group do not receive any special intervention, but are given a placebo instead.

(cont'd next page)

Division of interventions over schools

School area	Type*	Suppl.	Diet	Educ.	Controls	Total
Surabaya	SMP	6		1	1	8
Surabaya	SMP-K	1				1
Surabaya	MT	4		2	1	7
Bangkalan	SMP	2		1	1	4
Bangkalan	PP		3	1	1	5
Sampang	SMP	2		1	1	4
Sampang	PP		2	1	2	5

* SMP = Sekolah Menengah Pertama
 SMP-K = Sekolah Menengah Pertama Kristen
 MT = Madrasah Tsanawiyah (Junior high schools)
 PP = Pondok pesantren (Islamic boarding school)

The total number of selected schools in the study is 34. The table shows the number of schools subjected to the three interventions in the study and the number of schools used as control groups. These schools are located in the project areas, which are the city of Surabaya and the towns of Bangkalan and Sampang in Madura. The abbreviations of school types are explained to the right of the table.

PROJECT ACTIVITIES

1 9 9 7

January

Fifty per cent of the baseline data had been entered since December.

Supplementation started in fifteen junior high schools in Surabaya and four in Madura.

Qualitative research methods and the dietary intervention were developed.

February

Schools were closed for the three-week **Idul Fitri** holidays. Therefore the team busied itself with an introduction to qualitative research in the form of **participant observation**. The dietary intervention was further developed.

March

Field activities were resumed and supplementation started on a regular basis. **Focus group discussions** were held and students were asked to keep a **diary** of their **food consumption and expenditure**, as part of the qualitative research.

(cont'd from previous page)

MONITORING

To assess the impact of the different interventions, data is collected on three occasions: baseline, mid-term, and post-intervention.

All data collection is conducted by the field supervisors, assisted logistically by the teachers. Supervision and quality control is the task of two Assistant Field Managers.

BASIC DATA COLLECTED FROM THE ENTIRE POPULATION

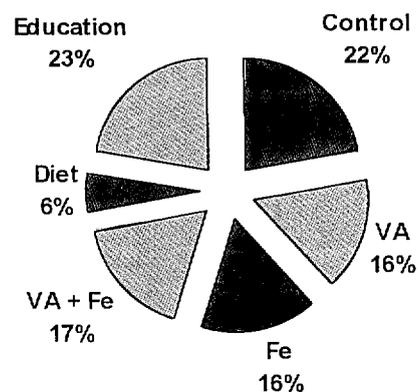
- A standard questionnaire is used to interview the pupils on socio-economic data, menarche/adrenarche, knowledge of vitamin A-rich foods, and vitamin A intake through food and supplements. Data includes maternal age and education, family size, sanitation, health status, and 24-hour recall of foods consumed.
- Anthropometric measurements consist of height (to the nearest 0.1cm, using a microtoise), weight (to the nearest 0.1kg, using Soehnle digital weighing scales), mid-upper-arm-circumference [MUAC] (using a special tape

measure developed by the Department of Health).

- Hemoglobin is determined in peripheral blood (finger tip) using the Hemocue instrument.

FUNCTIONAL TESTS

- In order to assess aerobic metabolism, a modified Cooper test was performed, during which the pupils ran 1.4km.
- Report grades are collected on different subjects, and a separate test has been developed to test the intelligence of the pupils in a standard way.



INTERVENTION GROUPS

(Total no. of adolescents involved = 6582)

DATA COLLECTED FROM A SUBSAMPLE:

- To get a better impression of food patterns, a subsample was asked to keep a diary of food intake for three weeks.
- Venous blood (3cc) is obtained and consequently centrifuged at 2,000 to 3,000rpm for 10 minutes. The resulting serum is transferred to special serum tubes, which are stored in a freezer until transport to the Nutrition Research and Development Center (NRDC) in Bogor, where the serum samples are analyzed for retinol and ferritin, as well as other indicators of iron and vitamin A status.
- Fecal samples are collected and investigated for evidence of Hookworm, Ascaris, Trichuris and Strongyloides infestation.



To allow detection of a 50 per cent reduction from this prevalence, and accounting for an expected 25 per cent dropout rate, 168 samples per cohort are needed. There is a total of five cohorts: vitamin A supplementation, iron supplementation, dietary intervention and controls.

Therefore, the total subsample size is 840 students, divided randomly over the schools and grade levels.

All activities in this study will be carried out in close cooperation with the departments of Health, Education and Religion at local, provincial and central levels. The intervention will be linked to the existing school health system (UKS or *Usaha Kesehatan Sekolah*). ®

Venous blood is collected from the study population for analysis of retinol and ferritin, as well as other indicators of iron and vitamin A status

PROJECT ACTIVITIES

— April

The **second round** of data collection began and the supplementation is continuing. The **dietary intervention** began, in the five *pondok pesantren* where this intervention is being carried out. **Baseline data analysis** was on-going.

— May

QUALITATIVE DATA

(See next page)

SAMPLE SIZE

The sparse data available on anemia prevalence among adolescent Indonesian girls (Schultink, 1995) shows an anemia prevalence of 30 per cent, and this should be no different in the study population.

Division of the subsample group

Type of intervention	Vitamin A supplements	Iron supplements	Vit. A + iron supplements	Diet	Controls
Number of schools or grades	15 grades	15 grades	15 grades	5 schools	12 schools
Number of pupils per school or grade	12	12	12	84	12

Qualitative research

The purpose of this research is to get an insight into the life of East Javanese adolescents, so that effective health education packages can be formulated, with regard to content, form and channel.

project activities

STUDY POPULATION

The study population of the qualitative study consisted of girls (and boys, to a certain extent) in state-run and private junior high schools in Surabaya and Madura, of predominantly Javanese and Madurese ethnicity, who are Muslim.

MANPOWER

The major part of the qualitative research was carried out by five field workers, already employed in the study.

Four of the field workers were female and one was male, which made it possible and necessary to include boys in this part of the study. Also four of them were Javanese and one was from Madura.

Only the participant observation was carried out by all 12 field workers.

SELECTION OF SCHOOLS AND SUBSAMPLE

The 24 schools in the study (all non-PP school) were categorized according to the type of pupils in the school, with various categories based on impression of the students' general behaviour, obtained during the quantitative research.

The Madurese schools seemed to be quite homogenous in this aspect and were therefore categorized as one.

It was agreed that, under the given circumstances, it was not advisable to organize focus group discussions with participants from different grades as this would inhibit the younger students. Also, it was agreed that participants – as well as the facilitator – of these group discussions should all be of the same sex.

It was also recognized that, among junior high school pupils, students tend to form cliques. These cliques are quite strong and having two members of the same clique in one focus group discussion would not only reduce the variability of the opinions raised, but would also polarize the group too much and inhibit other participants.

Thus, it was decided to involve the class teachers in identifying them and to keep them in separate groups for the FGDS.

In-depth interviews were an important part of the qualitative research undertaken by the GIRLS study



PARTICIPANT OBSERVATION

(February 1997)

The participant observation fell around the Muslim holiday season of Idul Fitri and the schools were closed, therefore the students involved in the GIRLS study were impossible to track down.

The Idul Fitri holiday also meant that the field workers were going back to their hometowns or villages for the week-long break.

Due to these difficulties, field workers were allowed to select a teenager in their own environment (such as a neighbour or a relative), who could represent the pupils in the study population.

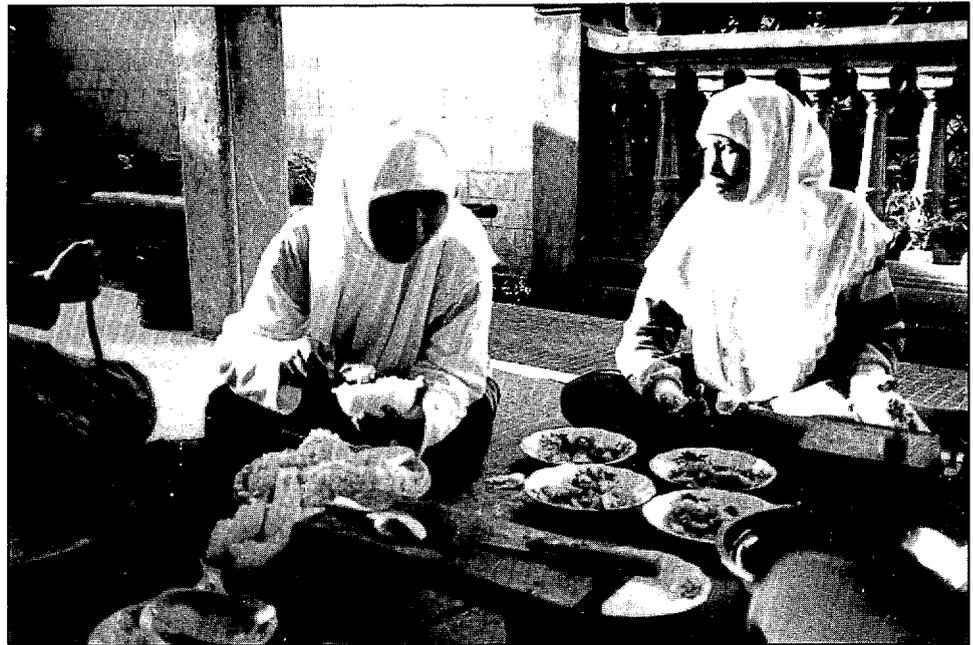
Field workers observed the teenagers' activities for a whole day and then wrote a report on it, commenting on the most interesting things that happened or was said.

FOCUS GROUP DISCUSSION (FGD)

(March 1997)

The purpose of the FGDs is to investigate the variety of ideas and opinions in this age group. The ultimate goal is to obtain insight into 'the world of the teenager', their priorities, what is of importance to them, the choices they make and how these are influenced.

The focus of the first group discussions was 'idols' (who their idols are, what makes them special, etc.). Based on information gathered in the FGD, the next focus was determined, which differed in the



different groups. Analysis of transcripts from the FGDs was conducted by the team of field workers together with the project manager.

In total, four FGDs were conducted in March.

EXPENDITURE DIARIES AND INTERVIEWS

(March 1997)

A limited number of pupils were asked to keep a diary for approximately three weeks, during which all food consumed and all money spent was recorded in a standard format. At the start of the three weeks, the pupils were individually interviewed on their normal consumption and expenditure pattern as well as on who pays for their needs and wants, and who makes the choices. During the three weeks, they were intensively followed by the field workers, on which occasions the diaries were discussed.

This method yielded both quantitative information on their diet and expenditure, and qualitative data on who influences the choices they make and how this process works. ④

Some of the students in the study population were asked to keep a diary of all the foods they consumed during a three-week period

**project
activities**