

## Anemia is a severe public health problem in pre-school children and pregnant women in rural Bangladesh

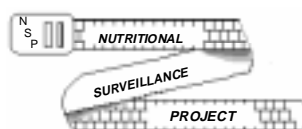
**A half of all pre-school children and pregnant women in rural Bangladesh are anemic, a prevalence that indicates a severe public health problem, according to new data from the Nutritional Surveillance Project. A national anemia survey completed in November 2001 during routine nutritional surveillance has also shown that about one third of school-age children, adolescents and non-pregnant mothers had low hemoglobin concentrations. The data indicate that 23 million children in rural Bangladesh and 9 million women of reproductive age are anemic. The scale of the problem, the harmful effects of anemia on child growth and development, and the danger anemia poses to the lives of pregnant women and their unborn babies are clear reasons for key stakeholders to urgently tackle this problem. Until fortified foods become widely available, or until poor rural people eat enough foods rich in micronutrients, iron supplements will be a key means to prevent and control anemia in Bangladesh. All opportunities to deliver iron supplements to children and women need to be explored.**

Anemia is a condition in which the red blood corpuscles contain too little hemoglobin, the iron-containing red pigment that carries oxygen from the lungs to all tissues in the body. A mother who is iron deficient during her pregnancy has a greater risk of dying during childbirth and of having a small baby. Iron deficiency also impairs the growth and learning ability of children, lowers resistance to infectious diseases, and reduces the physical work capacity and productivity of adults.<sup>1</sup> Not only are these effects harmful to human health but they also have an impact on social and economic development. Economic losses due to iron deficiency in South Asia have been estimated at USD 5 billion annually.<sup>2</sup>

In May 2002 government leaders and Heads of State will meet at the United Nations Special Session on Children to review progress towards the goals of the 1990 World Summit for Children, and to set new goals for the next 10 years. One of the goals set in 1990 was to reduce the prevalence of iron deficiency anemia in women by one

third over the following 10 years. Progress in Bangladesh towards other goals has been assessed by the Nutritional Surveillance Project (NSP) of Helen Keller International and the Institute of Public Health Nutrition (IPHN), but progress in reducing anemia could not be estimated because nationally representative data were not available from the early 1990s.<sup>3</sup> Nevertheless data collected in 1997 by the NSP indicated that anemia was a severe public health problem in Bangladesh.<sup>4</sup>

It is expected that the UN Special Session in 2002 will agree to renew the goal to reduce iron deficiency anemia by one third, with a target date of 2010. Nationally representative data are therefore now needed on the prevalence of anemia in women and children in Bangladesh to monitor progress towards this goal. The NSP is able to meet this need because it has an existing system to collect data every two months on a nationally representative sample of rural households containing a mother and child aged less than 5 years old. By adding a special module on anemia to its routine data collection in October and November 2001, the NSP was able to collect, process and analyze



data on the hemoglobin concentrations of nearly 5,000 children, adolescents and mothers in less than 4 months. Details are given in Box 1 of the methods used by the NSP to estimate the hemoglobin concentration and how anemia is classified.

UN Special Session, the prevalence of anemia will need to fall from 48.3% to 32.2% in preschool children, from 33.5% to 22.3% in school-aged children, from 36.3% to 24.2% in adolescents, from 33.9% to 22.6% in non-pregnant women and from 50.9% to 33.9% in pregnant women by the year 2010.

**Box 1 Determining the prevalence of anemia**

The NSP randomly selected households containing a mother with a child aged less than 5 years in 24 fixed rural sub-districts. A drop of capillary blood was taken from the finger of all children up to the age of 19 years and from the mother, and the hemoglobin concentration was estimated using a portable hemoglobinometer (HemoCue, Angelholm, Sweden). Anemia was defined using hemoglobin thresholds recommended by the WHO and UNICEF, as follows: children aged 6-59 months, <11.0 g/dL; children aged 5-11 years, <11.5 g/dL; children aged 12-14 years, <12.0 g/dL; adolescent boys and adult men, <13.0 g/dL; adolescent girls and non-pregnant women, <12.0 g/dL; and pregnant women, <11.0 g/dL.<sup>6</sup> If more than 40% in any group are anemic then the problem is severe; if 20-39% are anemic the problem is moderate; and if 5-19% are anemic the problem is mild.<sup>7</sup>

Figure 2 compares the findings of the 1997 national anemia survey with data collected in 2001 and shows that the prevalence of anemia in 2001 was lower in all groups except for children aged 48-59 months and pregnant mothers. The difference between the two surveys was significant for non-pregnant women.

**What women said**

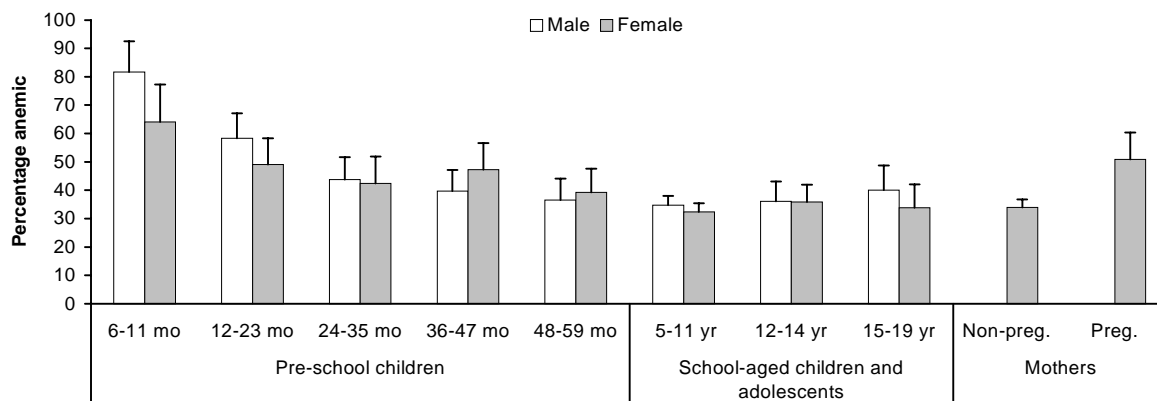
At the same time blood samples were collected the NSP interviewers asked each mother whether she had taken iron tablets during her last pregnancy. Almost two thirds of mothers (60%) reported that they had not taken any iron tablets and the most commonly given reasons were 'I did not need them' (26%), 'I did not know I needed them or nobody told me to take them' (26%), 'no money' (22%) and 'none available' (8%).

**The prevalence of anemia**

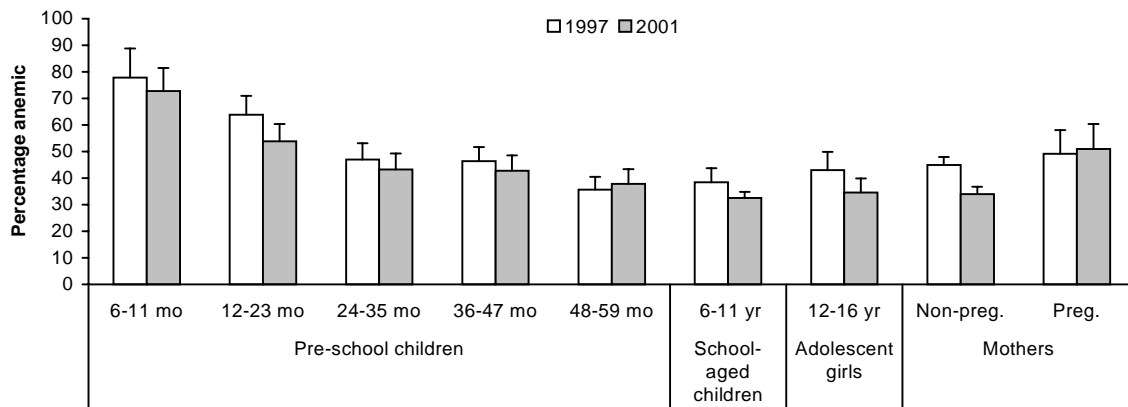
Figure 1 shows the percentage of preschool children (<5 years), school-aged children (5-11 years), adolescents (12-19 years) and women who were classified as anemic. The findings indicate that anemia is still a serious public health problem in preschool children and pregnant women in Bangladesh while it is a moderate public health problem in school-aged children, adolescents and non-pregnant women. There was no significant difference between boys and girls in the prevalence of anemia for any age group. In order to achieve the likely goal of the forthcoming

In Bangladesh pregnant women are usually given 2 – 4 weeks supply of iron tablets at ante-natal clinics but the survey found 62% of mothers had not visited a clinic at all during their previous pregnancy, and 22% had only made one or two visits so would not have been supplied with iron throughout their pregnancy. No children aged 6-24 months and less than 4% of older children and adolescents were reported to have taken any iron supplements in the previous two weeks.

**Figure 1.** The percentage of children, adolescents and mothers classified as anemic by sex, age, sex and pregnancy status in rural Bangladesh in 2001 (n = 4,753). The bars show the 95% confidence interval



**Figure 2.** The percentage of children, adolescents and mothers classified as anemic by age and pregnancy status in 1997 (n=2,816) and 2001 (n=4,288). The bars show the 95% confidence interval



**Program implications**

Although the general downward trend in the prevalence of anemia in Bangladesh between 1997 and 2001 shown in Figure 2 is encouraging, the prevalence in 2001 was still unacceptably high. If the new United Nations goal has any chance of being reached by 2010 then the coverage of current programs will need to greatly increased and new strategies to raise the consumption of iron will need to be implemented. What are the options?

Fortifying foods with iron is one possibility, but most rural people do not consume processed food, so this is unlikely to be effective in the short term. Improving the quality of the diet, particularly by eating more animal foods rich in iron, is another option, but such foods are expensive. Programs that alleviate poverty and provide people with more money to spend on food will help improve their diet, as will homestead food production programs that build on traditional rural agricultural practices. But it seems likely that raising awareness of the problem and providing iron supplements to the groups who are most vulnerable to the harmful consequences of iron deficiency will be the key strategies to prevent and control this huge public health problem in Bangladesh while long term measures are put in place to improve the diet.

**New recommendations in Bangladesh**

The IPHN has recently revised its recommended iron supplementation regimens to reflect the current views of the WHO, the Micronutrient Initiative and UNICEF (see Box 2). The recommended treatment includes folic acid, a vitamin which is also needed to make hemoglobin and is often lacking in the diets of poor people.

There are special problems with giving iron to children aged 6-23 months because they are unable to swallow tablets, while iron syrup is expensive and bulky to distribute. Two alternatives are being studied: a sprinkle to add to a child’s food, and a dispersible tablet that can be chewed or dissolved in water, but it could be some time before these become widely available.

Older children, adolescents and non-pregnant women of reproductive age should also be considered for iron-folate supplements if resources allow and where there are opportunities to provide supplements at low cost. For example community based individuals and organizations, such as traditional birth attendants, religious leaders, and women’s groups have been successful in improving the coverage of iron-folate supplementation programs in other Asian countries,<sup>5</sup> and could be considered in Bangladesh. Schools could also be considered as a way of reaching adolescent girls.

**Box 2.** Dosages proposed in the national guidelines for the Prevention and Treatment of Iron Deficiency Anaemia of the IPHN, Government of Bangladesh

Target group	Dosage	Duration
Children 6-24 months	12.5 mg iron and 50 µg folic acid daily	Throughout the period
Children 2-5 years	20-30 <sup>†</sup> mg iron and 200 µg folic acid daily	Throughout the period
Children 6-11 years	30 mg iron and 200 µg folic acid daily	Throughout the period
Adolescent girls and non-pregnant women	120 mg iron and 800 µg folic weekly	Throughout the period
Pregnant women	60 mg iron and 400 µg folic acid daily	Starting as soon as pregnancy is detected and continuing throughout pregnancy
Lactating women	60 mg iron and 400 µg folic acid daily	3 months <i>post partum</i>

<sup>†</sup>Iron dosage based on 2 mg/kg body weight/day

## Recommendations

- Iron supplementation is the key short term strategy to prevent and control iron deficiency and anemia in Bangladesh. All opportunities for delivering iron supplements to children and women, particularly to children aged 6-23 months and pregnant women, should be exploited.
- In the medium to long term food fortification, homestead food production and dietary modification should be supported to increase the intake of iron and other micronutrients through the diet.
- The Nutritional Surveillance Project can be used to monitor the implementation and effectiveness of policies and programs to reduce anemia and to track progress towards the goal of the UN Special Session on Children.

It is also clear that people need to be made aware of the dangers of iron deficiency and about mother's special needs during pregnancy. Iron tablets are widely available and inexpensive: a pack of 100 tablets can cost less than Taka 15 (about USD 0.25).

## Monitoring progress in anemia control

This Bulletin highlights a large and urgent problem which is not likely to be solved by a single fix, but by a concerted effort from stakeholders to grasp all available opportunities to improve iron intake and to develop innovative new methods. The Nutritional Surveillance Project is ideally situated to monitor progress and can, over the next 10 years, repeat these anemia surveys as a part of its routine data collection.

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