Nutrition in Ghana:

Investing Now for the Year 2020

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Investing Now for the Year 2020

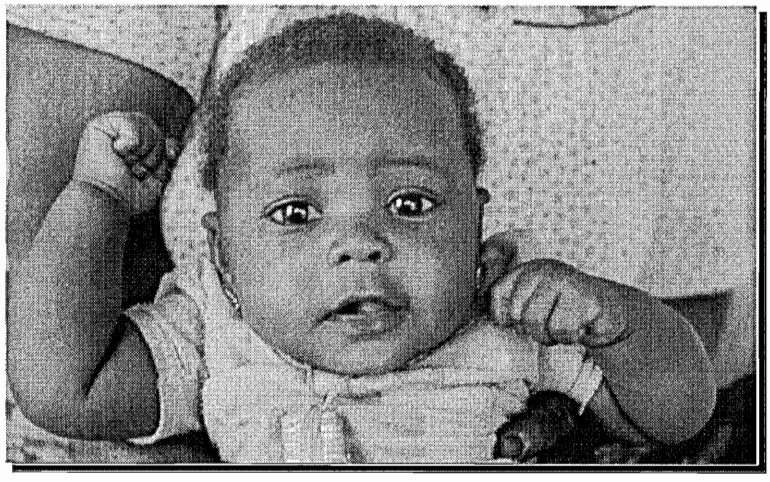
A *Profiles* Application for Nutrition Policy Analysis and Advocacy

Ghana: Vision 2020

Introduction

Ghana has a vision—the vision of becoming a middle-income country by the year 2020.

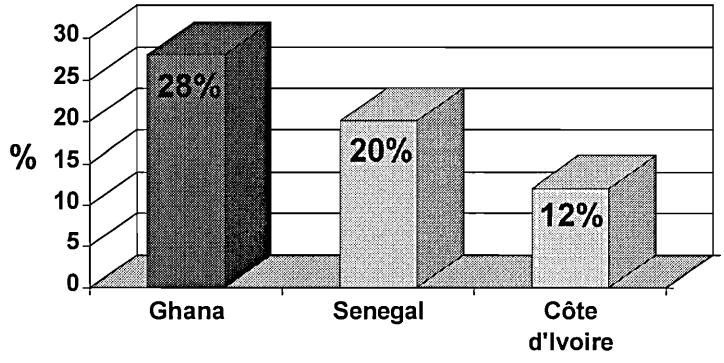
Ghana: Vision 2020



UNICEF/90-033/Sprague

This vision can only be realized if the children being born today are given the opportunity to live to their full potential. Sadly, however, this opportunity is outside their reach because of malnutrition.

Child Malnutrition

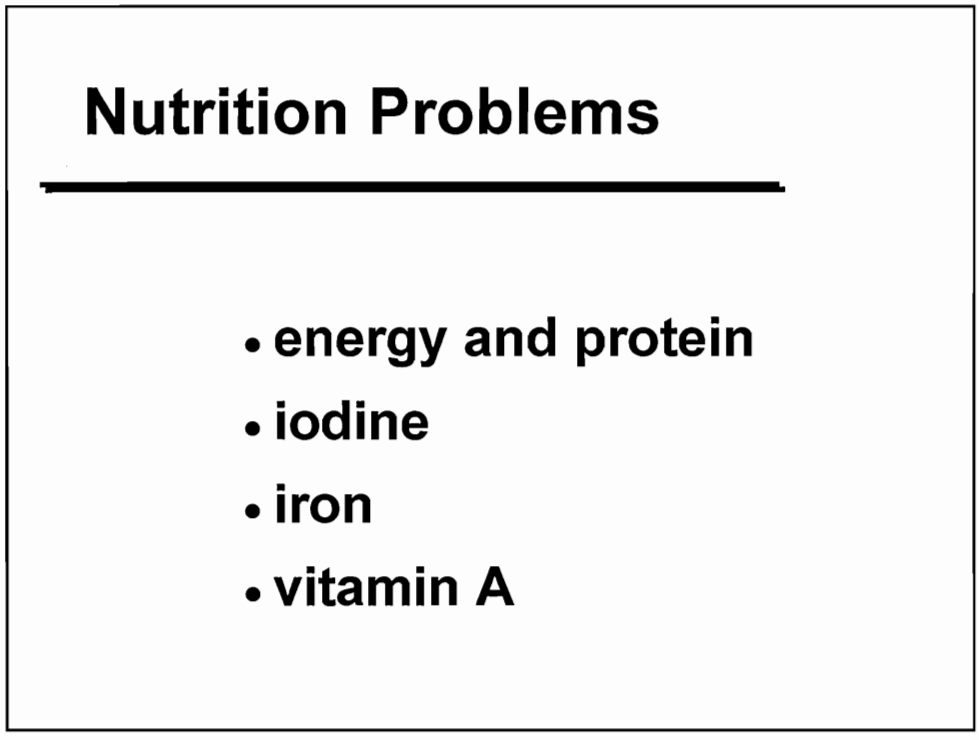


Current estimates indicate that about 28% of children under five years of age are underweight, as compared to 20% in Senegal and 12% in Côte d'Ivoire.

Outline of Presentation

- **Nutrition problems**
- **Consequences**
- **Solutions**
- **Economic benefits**

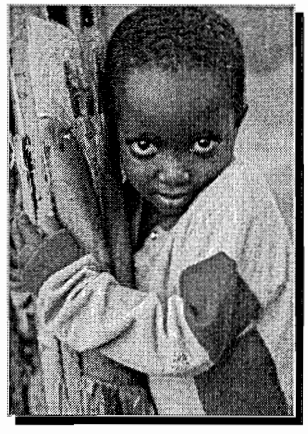
This presentation highlights the nutrition problems in Ghana and the enormous consequences that they will have for the country if they are not addressed. It also describes how timely solutions could translate into important economic benefits for the country.



The main nutrition problems include inadequate intakes of energy and protein, iodine deficiency disorders, iron deficiency anaemia, and vitamin A deficiency.

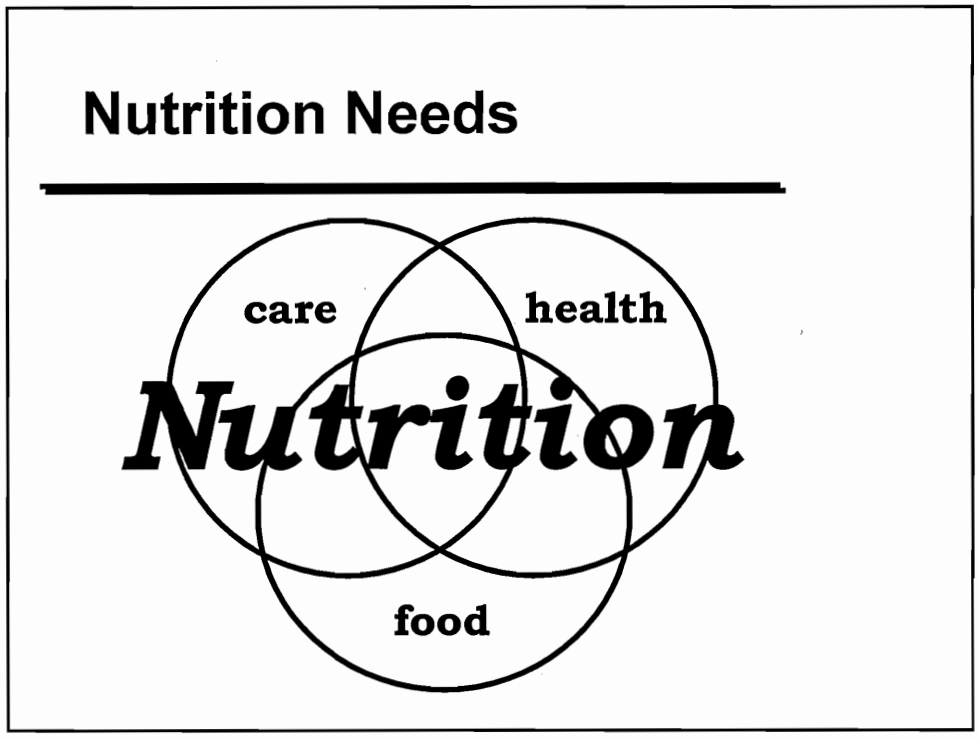
Hidden Malnutrition

- **No obvious signs**
- **Victims not aware**



UNICEF/94-1173 Pirozzi

Although these problems are enormous, their full magnitude is unappreciated because usually there are no obvious signs of the problem, and the victims themselves are often not aware. As a result, not enough attention is paid to malnutrition.



Adequate nutrition requires three complementary inputs: caring practices, the protection of child health, and the provision of adequate household food security. This presentation focuses on caring practices, such as exclusive breastfeeding and appropriate complementary feeding in infancy.

Ghana's Commitment

1990: World Summit for Children

1991: Ratified Convention on Rights of the Child

1992: International Conference on Nutrition

1995: National Plan of Action on Food and Nutrition

Goals

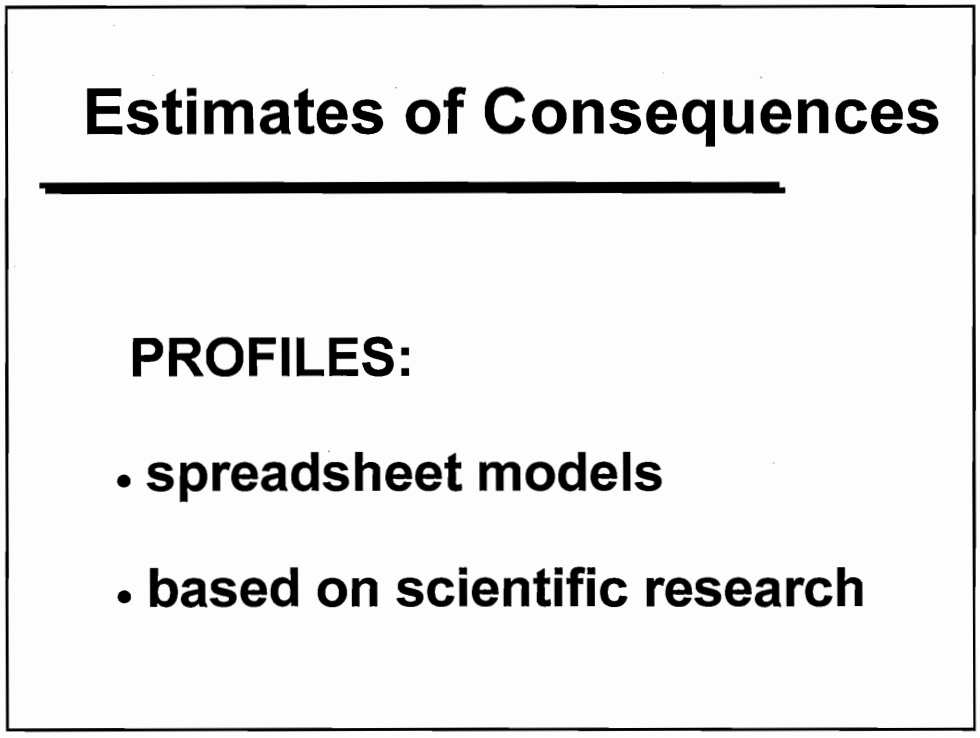
Ghana's commitment to ensuring the health and well-being of children is manifest in the fact that following the World Summit for Children in 1990, it was the first country in the world to ratify the Convention on the Rights of the Child.

Ghana's Nutrition Objectives

- **Ensure household food security**
- **Reduce child malnutrition**
- **Prevent and control vitamin A, iron and iodine deficiencies**
- **Reduce infant, child and maternal mortality**

To follow-up the International Conference on Nutrition in 1992, the government developed a National Plan of Action on Food and Nutrition with eleven specific objectives, including ensuring household food security and the reduction of child malnutrition in the population.

The Ministry of Health has recently established targets for the prevention and control of vitamin A, iron, and iodine deficiencies. We will show later that achieving these targets would contribute significantly to other Ministry of Health objectives, including goals for the reduction of infant, child, and maternal mortality.



Consequences of Malnutrition and Benefits of Action

To estimate the consequences of malnutrition in Ghana, we have used *Profiles* computer software. This software consists of a set of spreadsheet models that are based on recently published scientific research.

Consequences

- **Death**
- **Sickness**
- **Mental capacity**
- **Economic productivity**

This scientific research relates malnutrition to functional consequences in terms of death, sickness, mental capacity, and economic productivity.

PROFILES Assumptions

- **Five-year period: 1997-2001**
- **Costs and benefits quantified in dollars**
- **UN medium population projection**
- **National surveys**

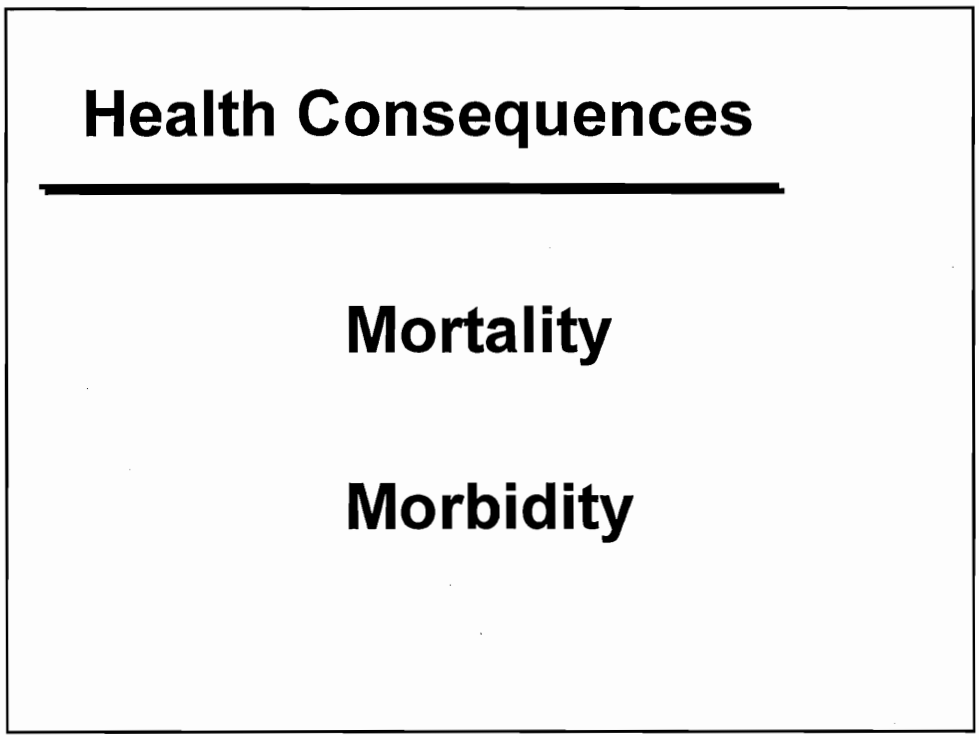
These consequences are calculated over a five-year period from 1997 to 2001, the period of the current Medium Term Development Plan of the Ministry of Health for the Vision 2020.

Costs and benefits are quantified in US dollars due to the significant fluctuation of the cedi in recent years.

The demographic data are based on the United Nations medium population projection for Ghana and the nutrition data come from national surveys.

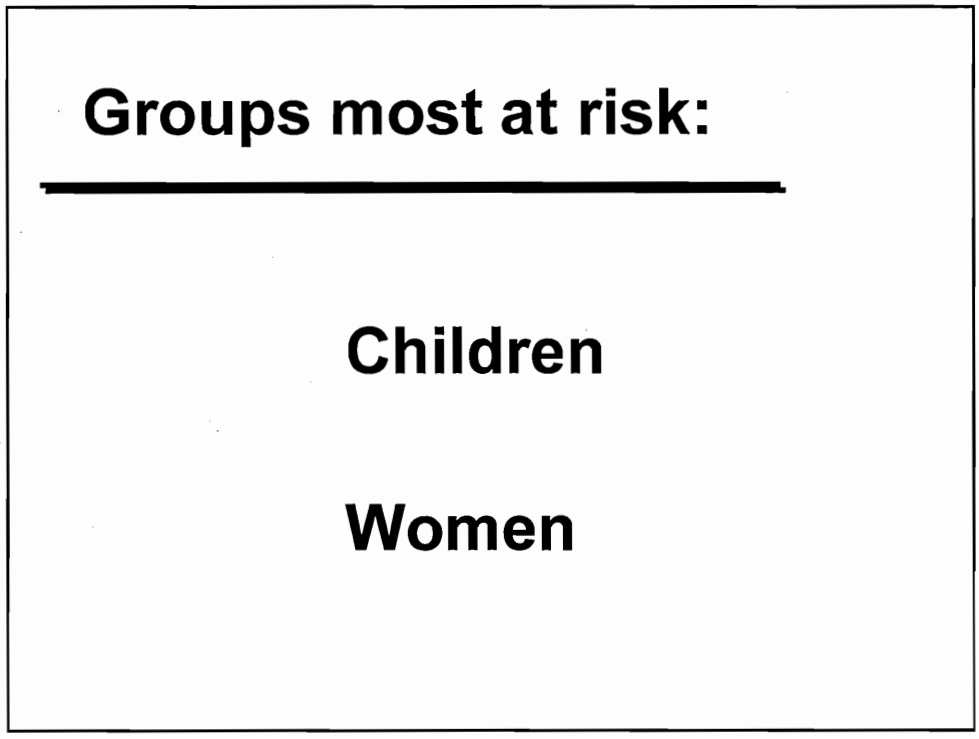
Nutrition and Health Outcomes

Let's now look at the effect of malnutrition in each of these areas, beginning with health.



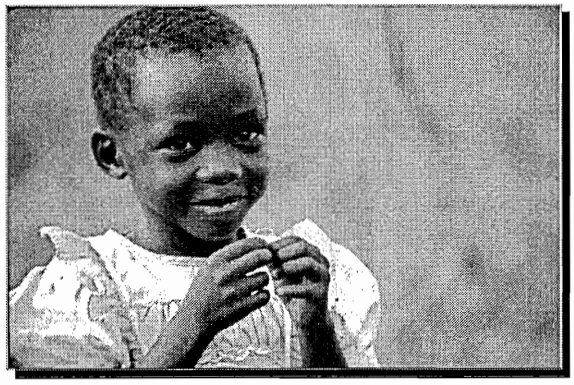
Nutrition and Health Outcomes

The major health consequences of malnutrition are mortality and morbidity.



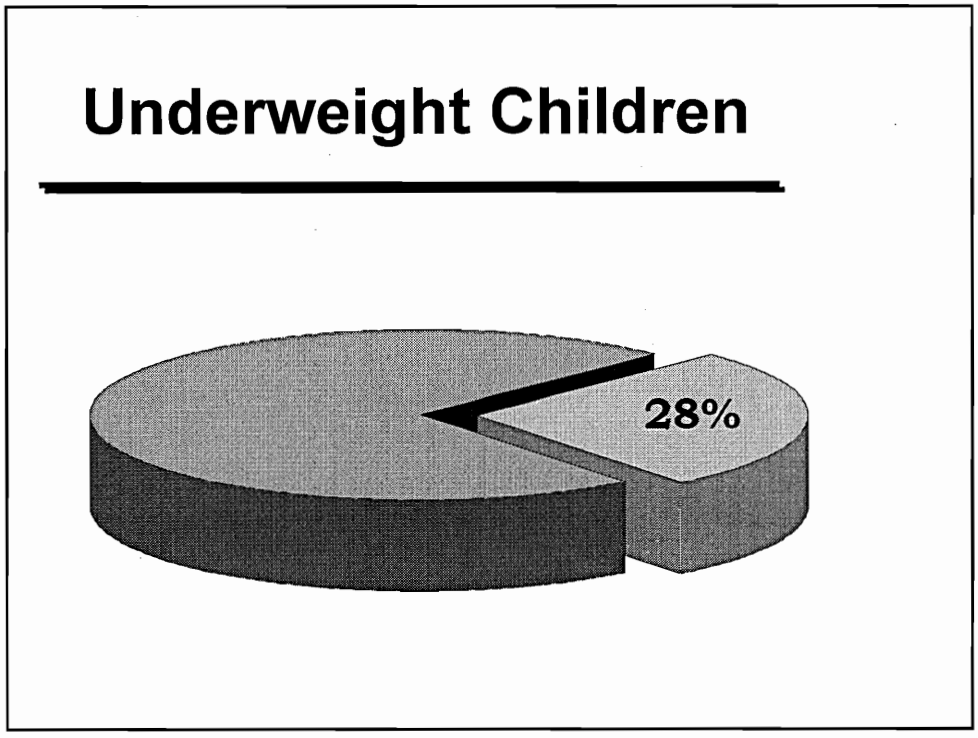
The groups most at risk are children and women.

Under-five mortality

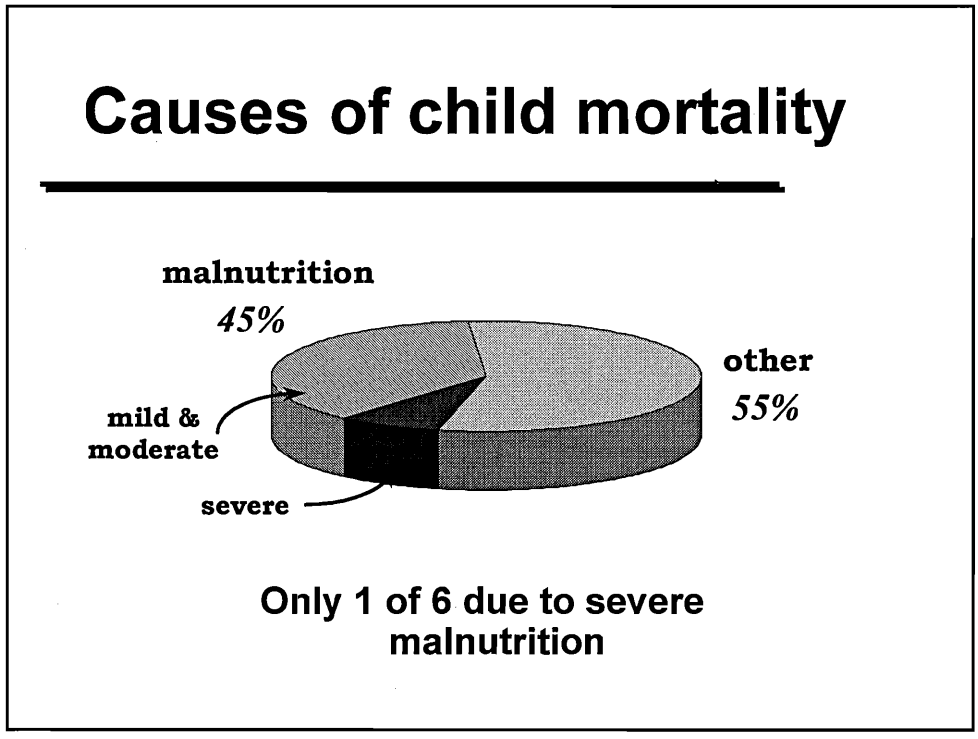


UNICEF/94-1155 Pirozzi

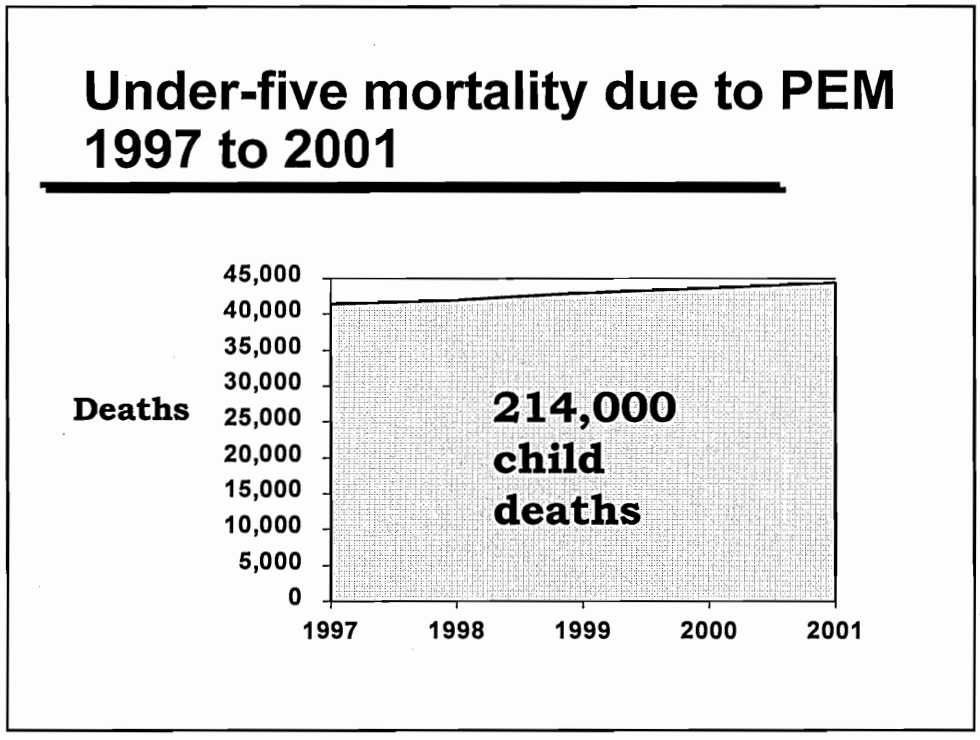
Recent scientific evidence shows the massive contribution that malnutrition makes to under-five mortality levels in developing countries. Malnourished children have impaired immune systems that make them at much greater risk of sickness and death.



Being underweight dramatically increases the risk of death. In Ghana, 28% percent of children under five suffer from being underweight, and the contribution of this to Ghana's under-five mortality rate is staggering.



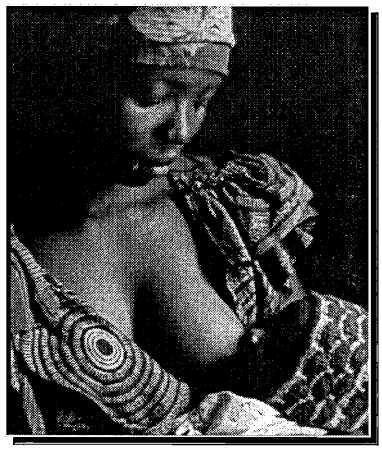
Looking at the effects of malnutrition on child mortality, we have estimated that in Ghana about 45 % of all child deaths beyond early infancy are due to protein-energy malnutrition, making this the single greatest cause of child mortality. Because only one in six of nutrition-related deaths is due to severe malnutrition, significant reductions in mortality can only be achieved by preventing mild and moderate malnutrition.



If no improvements are made, malnutrition will account for 214,000 child deaths between 1997 and 2001.

Sub-optimal breastfeeding

Only 6% of babies are exclusively breastfed during first 6 months



Another significant nutrition-related determinant that contributes to young child mortality is that of sub-optimal breastfeeding practices.

International experts recommend that babies be exclusively breastfed for the first six months of life, with no additional water, liquid, or foods given.

However, in Ghana only 6% of mothers exclusively breastfeed their babies for the first six months. The infant mortality rate in Ghana is 66 deaths per 1000 live births during the first year of life. We have estimated that sub-optimal breastfeeding practices contribute to about 10% of these infant deaths.

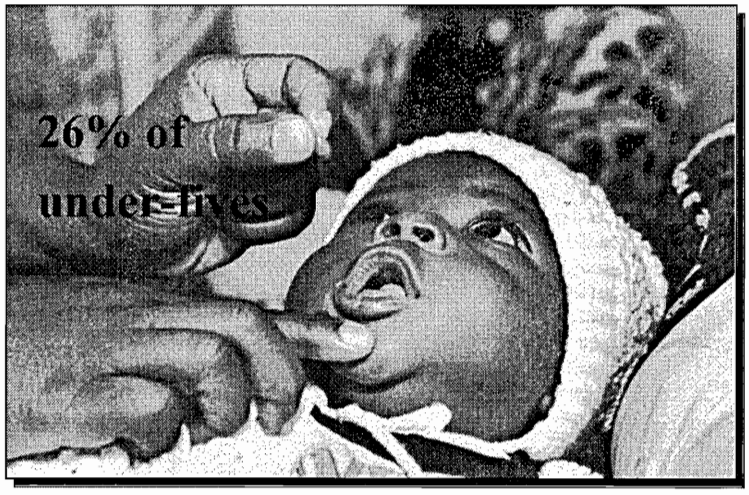
Sub-optimal breastfeeding

Causes 5,600 infant

deaths per year

In human terms, the cost to Ghana of the current practices of non-exclusive breastfeeding during the first six months of life is over 5,000 infant deaths each year. Optimal breastfeeding would contribute to the increase of birth intervals, which in turn is beneficial to the health and nutrition of mothers and infants.

Vitamin A Deficiency



UNICEF/ Pirozzi

Micro-nutrient deficiencies also have an immense impact on child mortality in Ghana. A significant problem is vitamin A deficiency, which affects 26% of the country's under-five population. Our calculations show that vitamin A deficiency accounts for one out of six of all child deaths between the ages of six and fifty-nine months.

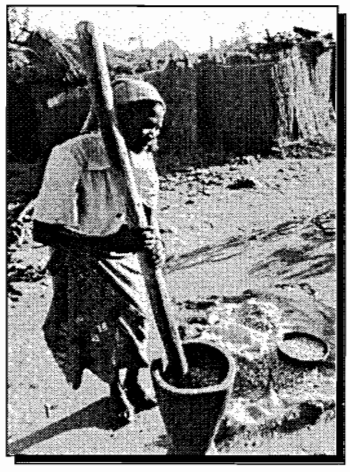
Child deaths 1997-2001

Due to vitamin A deficiency:

49,000

This means that between 1997 and 2001 the number of child deaths due to vitamin A deficiency will total 49,000.

Anaemia in pregnancy



UNICEF / Parozzi

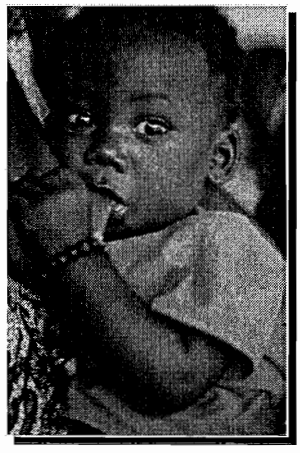
70% of pregnant women

In addition, women who are malnourished are more likely to face serious reproductive health problems which can lead to maternal and infant death. For example, anaemia during pregnancy, estimated in Ghana to affect close to 70% of pregnant women, has considerable implications for maternal mortality.

Ghana has an unacceptably high maternal mortality rate of 214 per 100,000 women. About 20% of this is due to anaemia.

Child morbidity

Optimal breastfeeding protects against infections.



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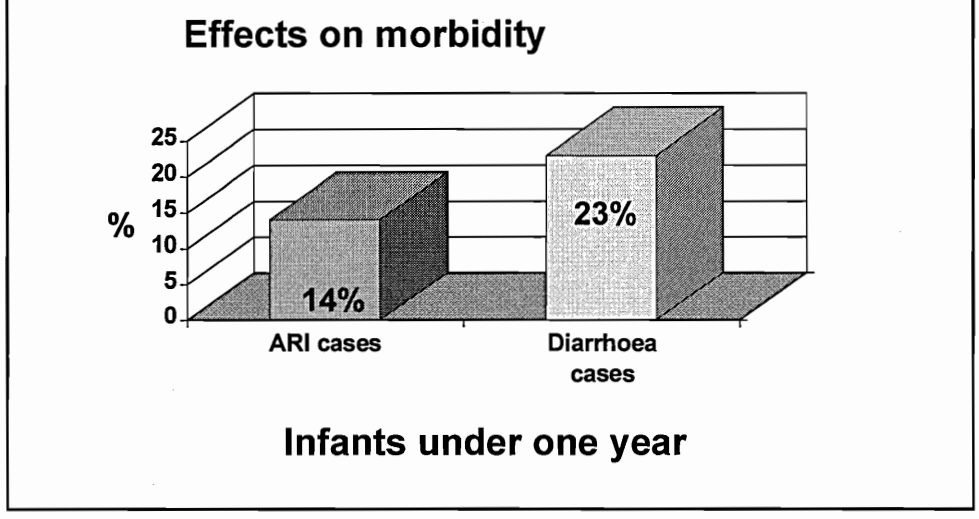
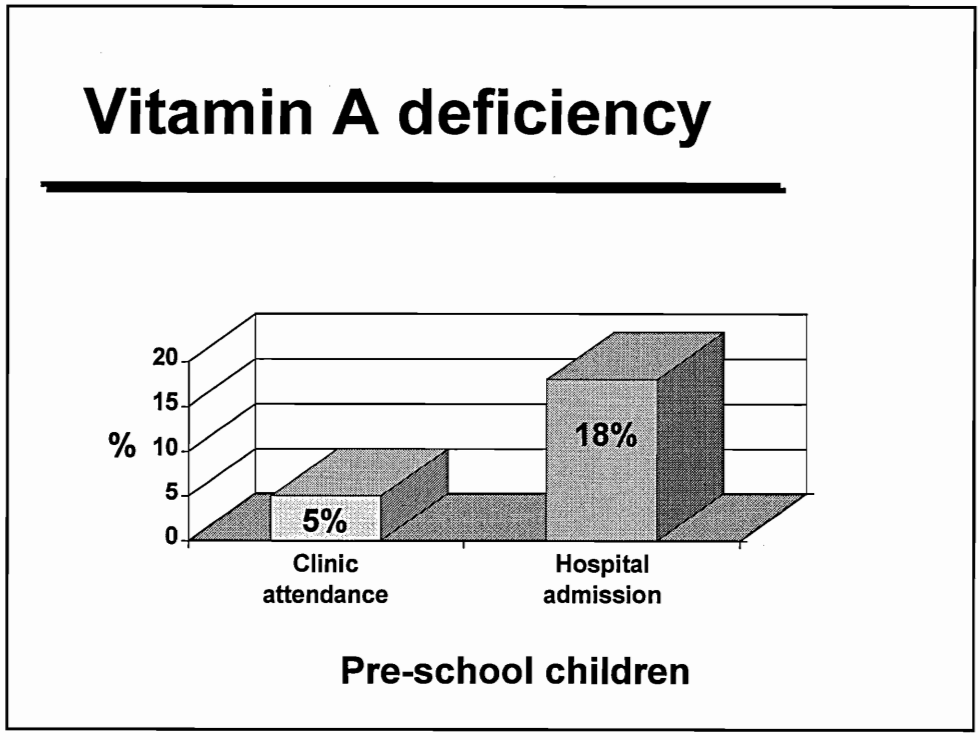
Child Morbidity

The strong relationship between child malnutrition and mortality is mediated through morbidity. Optimal breastfeeding protects infants against infections.

Sub-optimal breastfeeding

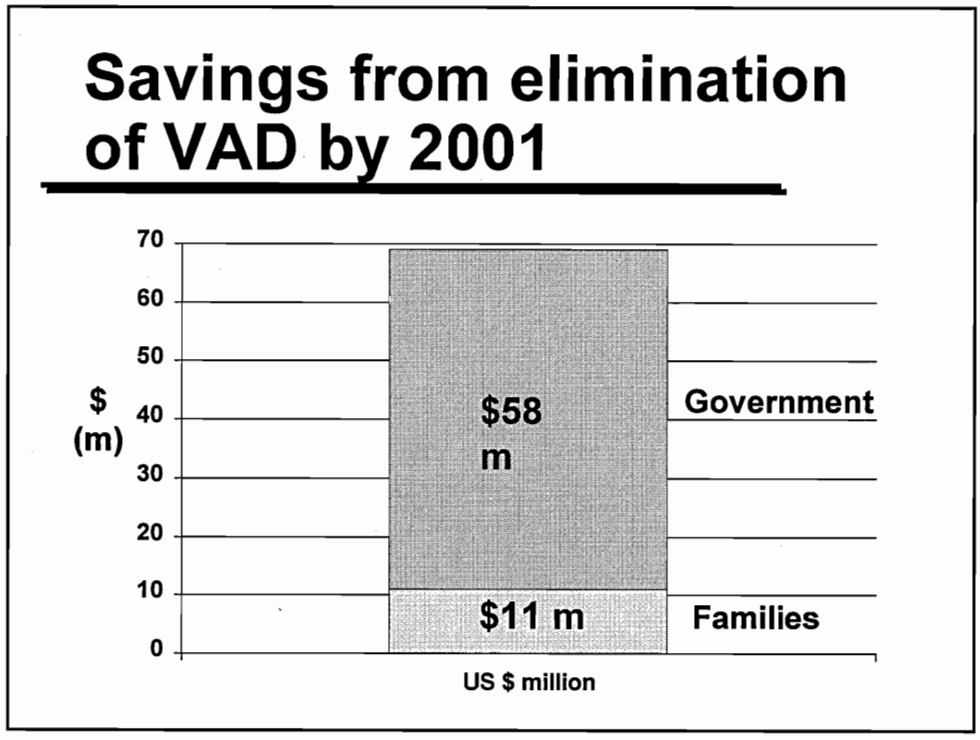


About 14% of all acute respiratory infections affecting children under one year old are due to sub-optimal breastfeeding practices, as are 23% of all diarrhoea cases.



Vitamin A deficiency in children also has an immense impact on morbidity levels. For example, vitamin A deficiency accounts for close to 5% of clinic attendances and 18% of hospital admissions of pre-school children.

Improving nutrition would lead to substantial savings for the country because of the positive impact it would have on morbidity reduction, especially in children under five.



For example, significant financial savings could be made if vitamin A deficiency were to be eliminated by the year 2001. The savings to Ghanaian families in terms of the care of sick children would be about 11 million US dollars, and savings to the government about 58 million US dollars.

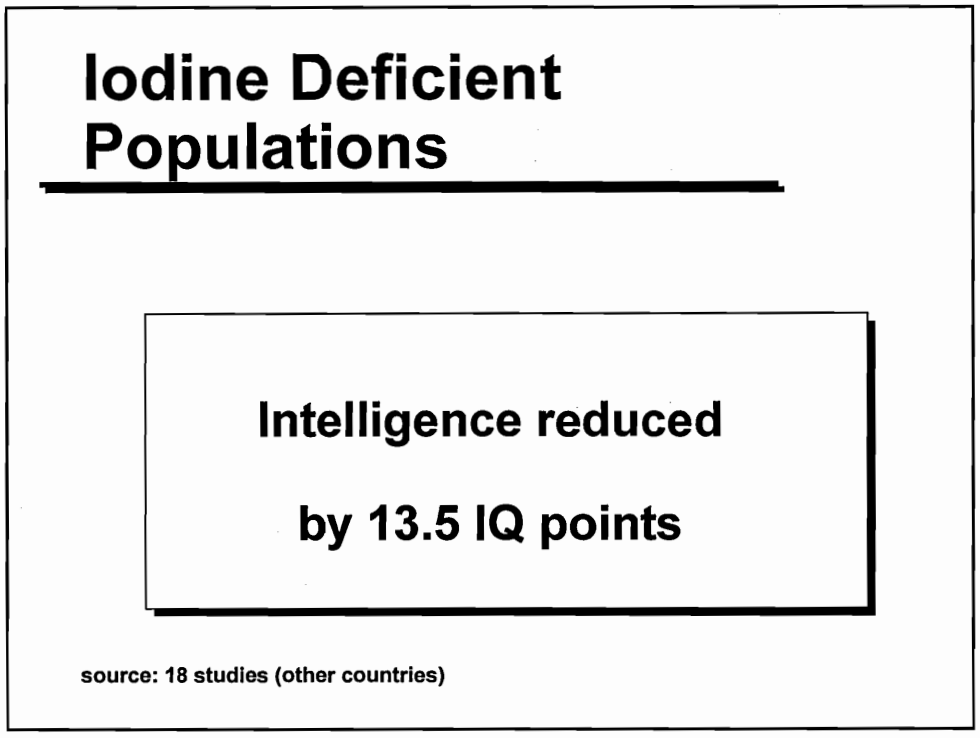
Education

Education

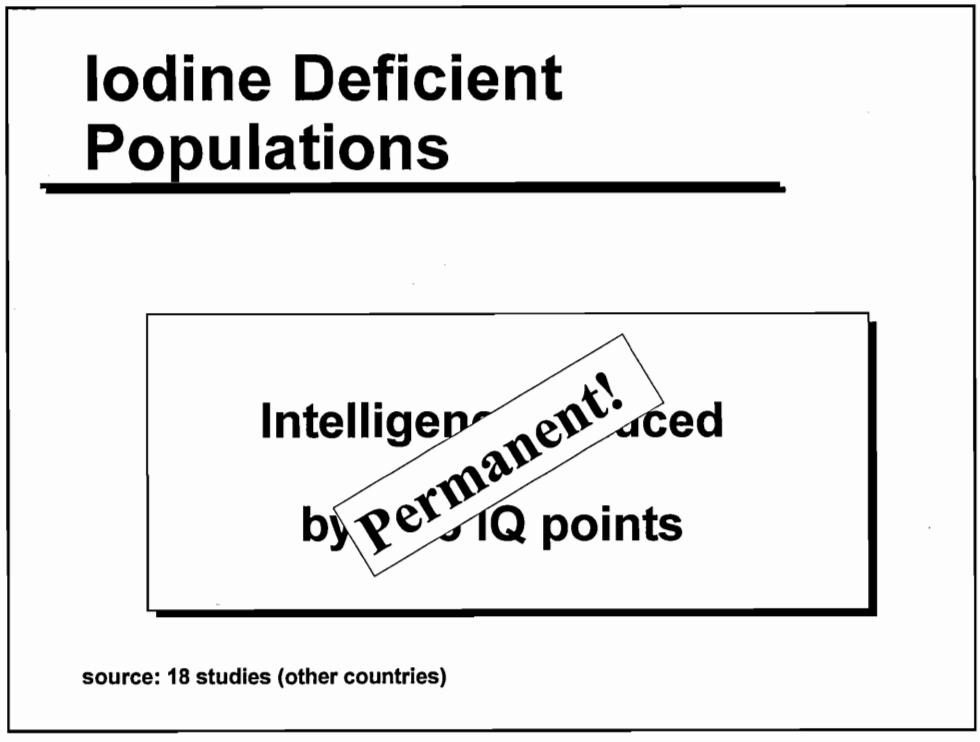
Good nutrition is a major determinant of educational performance in children.

Iodine Deficiency and Intelligence

Iodine, for example, is essential for the development of the brain during fetal life. Pregnant women living in iodine-deficient areas are likely to give birth to mentally retarded children. Results from various studies show that 3% of all babies born to iodine-deficient mothers will be cretins, 10% will be severely mentally retarded, and 87% would present some degree of intellectual deficit.



In iodine deficient communities, there is an average loss of IQ by about 13.5 points.



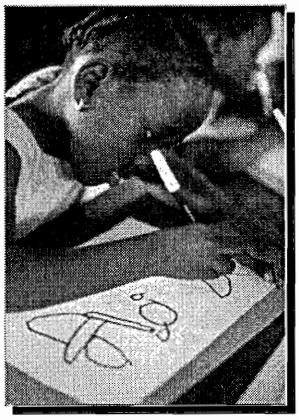
The mental impairment resulting from iodine deficiency is permanent.

Iodine Deficiency and Education

educability

drop-out rates

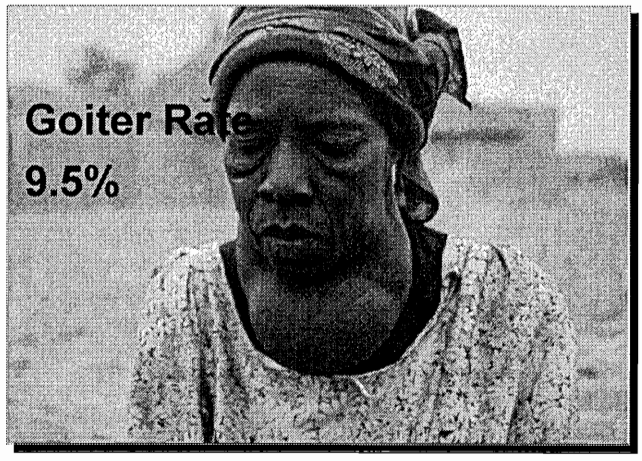
under utilization of school facilities



UNICEF/C-56-19/Murray-Lee

This mental impairment has considerable impact on children's educability and drop-out rates. This leads to under-utilization of school facilities.

Iodine Deficient Populations



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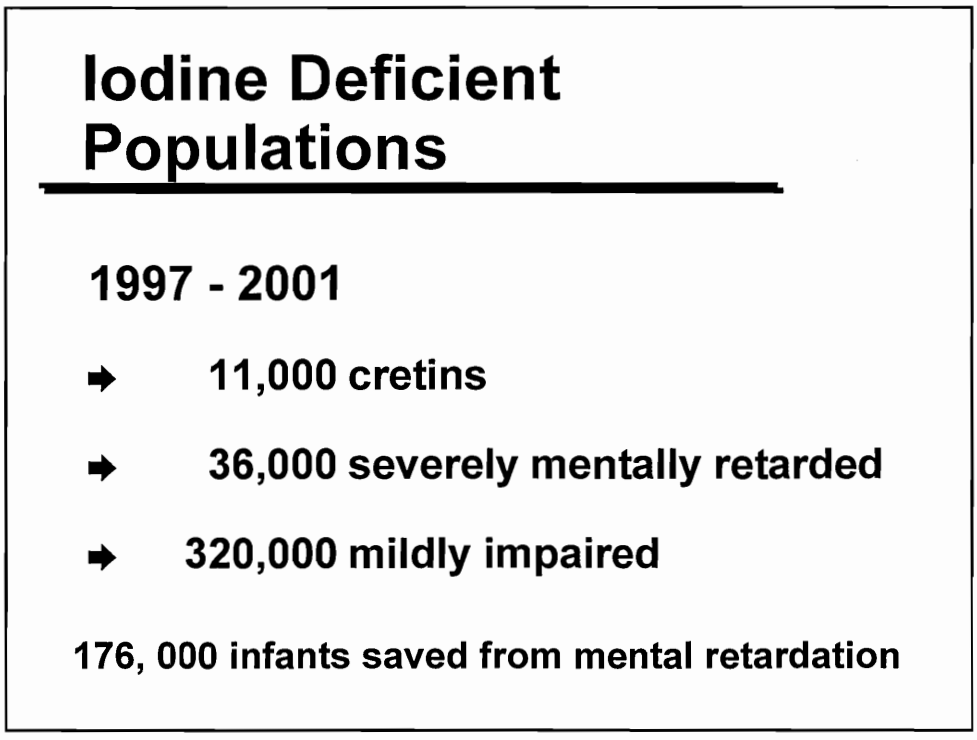
In Ghana, the total goiter rate is 9.5%.

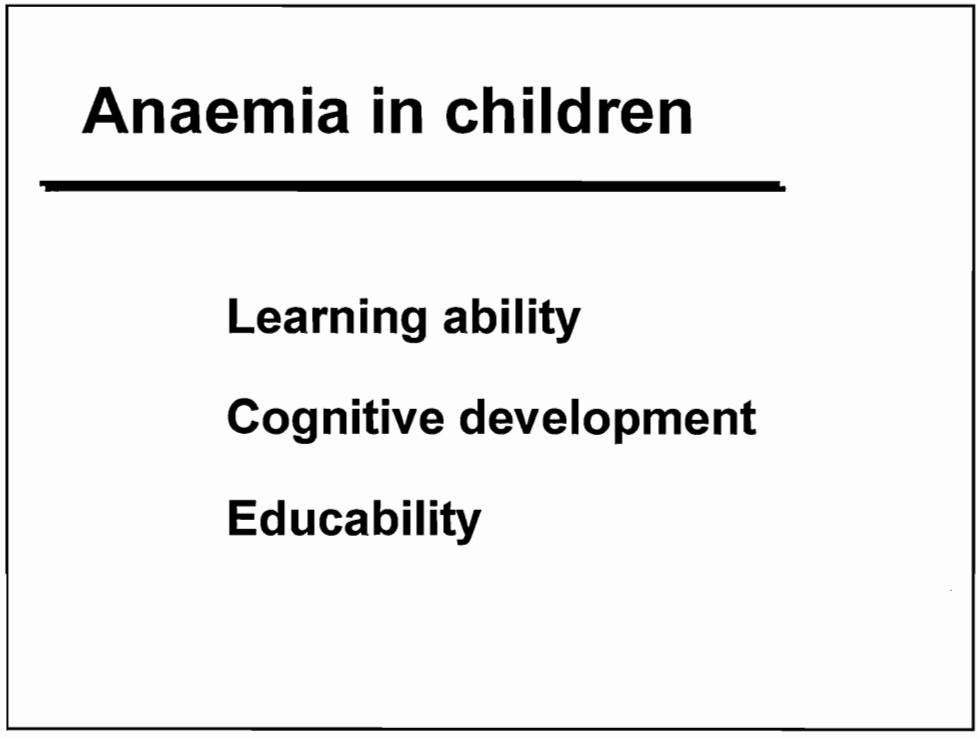


Using the projected birth rates for the next five years, approximately 11,000 babies will be cretins, 36,000 babies will be severely mentally retarded and 320,000 will be mildly impaired. With the appropriate intervention, 176,000 children could be saved from various forms of mental retardation over the next five years.

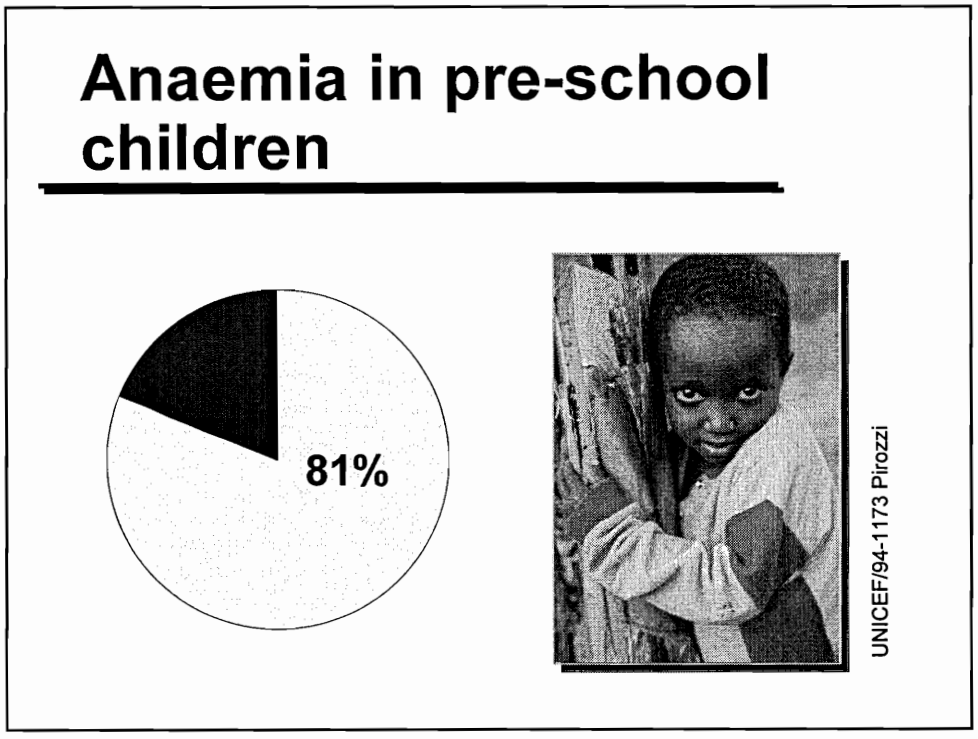
Universal Education

UNICEF/Pirozzi

Such an intervention would have an enormous impact on the Universal Basic Education Program.

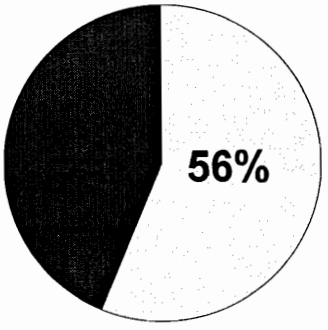


Iron deficiency anaemia reduces the learning ability, cognitive development, and educability of children.

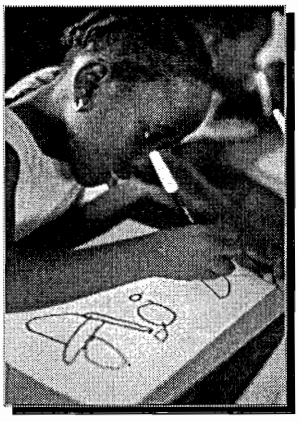


Recent data from the Ministry of Health's nationwide anaemia survey show that 81% of pre-school children are anaemic.

Anaemia in school children



(Volta Region, 6 - 15 yrs)



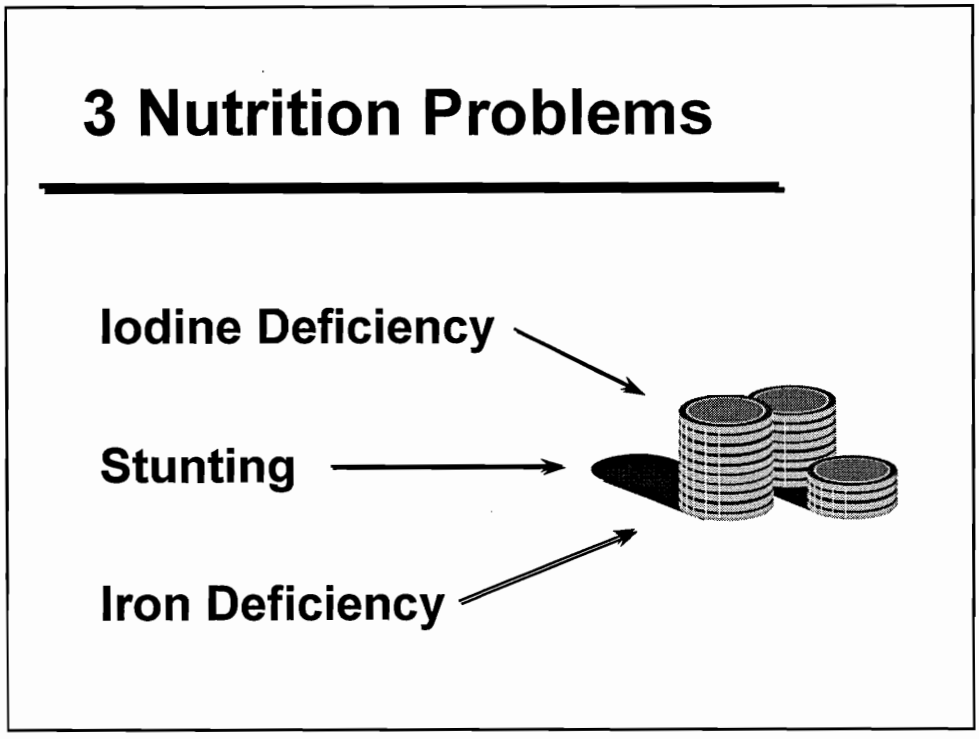
UNICEF/C-56-19/Murray-Lee

Surveys conducted in the Volta region also show that 56% of school age children are anaemic. These rates are high by any standards, reducing greatly the cost-effectiveness of investments in education and the contribution of these children to Ghana's future economy.

Economic Development

Economic Development

Malnutrition affects economic development in several ways.



We will look at three nutrition problems that affect Ghana's economy:

- mental impairment due to iodine deficiency,
- stunting due to protein-energy malnutrition, and
- iron deficiency anaemia.

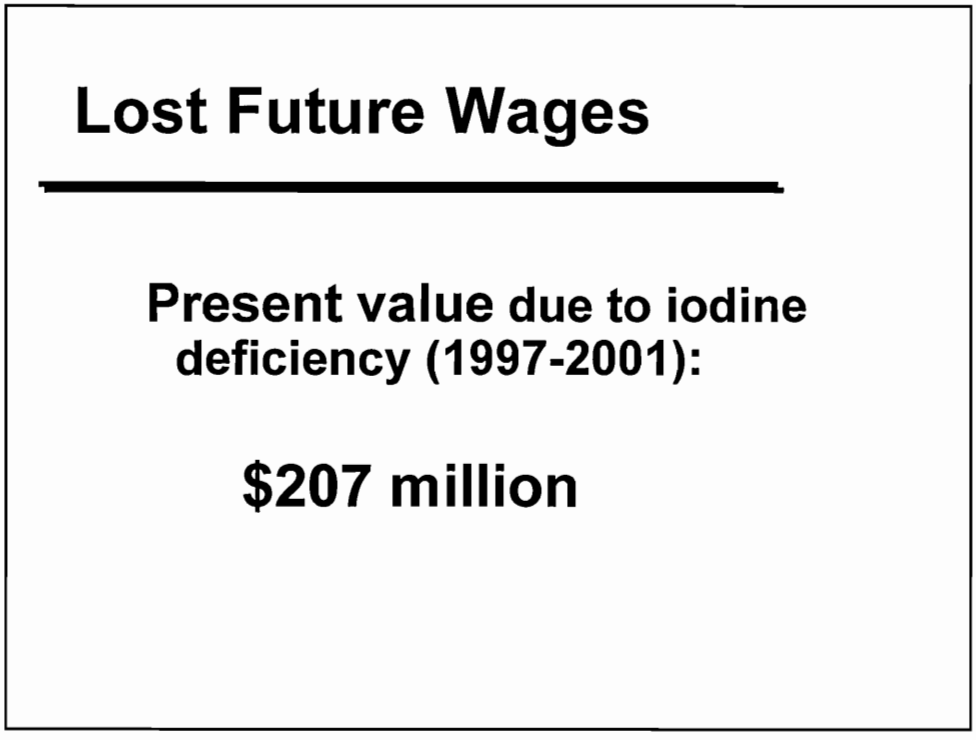
These three problems have a profound impact on work productivity.

Iodine Deficiency and Productivity

UNICEF/95-0065 Shadid

Iodine Deficiency

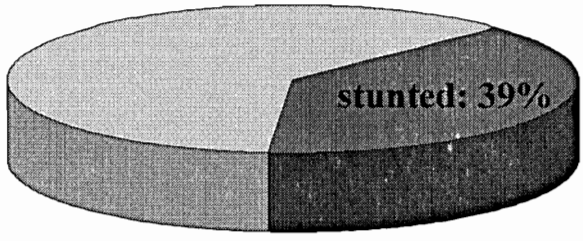
We must remember that the mental impairment caused by iodine deficiency is permanent.



The present value of lost future wages due to iodine deficiency over the next five years is about 207 million dollars.

Stunting and Productivity

Stunting at age 2



Source: DHS, 1993

Stunting Due to Protein-Energy Malnutrition

Stunting occurs when children do not get enough food during the first two years of life. Currently about 39% of all Ghanaian two-year-olds are moderately or severely stunted.

Consequence of Stunting

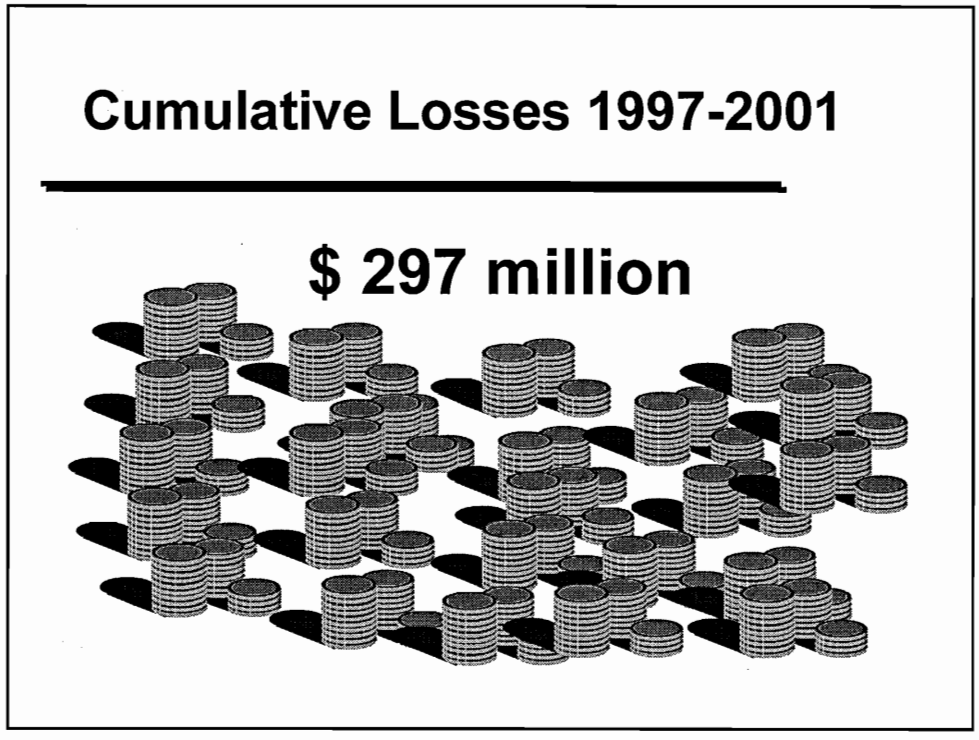
Reduces productivity

UNICEF/91-029 J Schytte

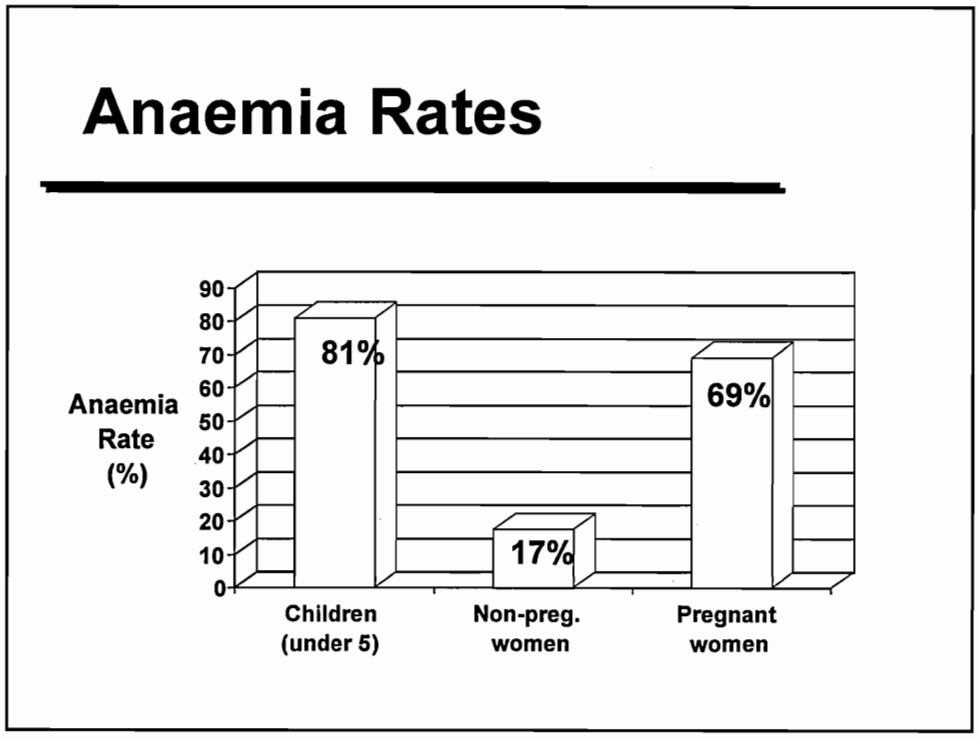
1% decrease in height = 1.4% decrease in productivity

Source: Haddad & Bouis, 1990

Stunted children grow up to become stunted adults, and one of the most significant consequences of adult stunting is reduced physical capacity and productivity. Research conducted in the Philippines shows that the productivity of physical labor declines by 1.4% for every 1% reduction in adult height.



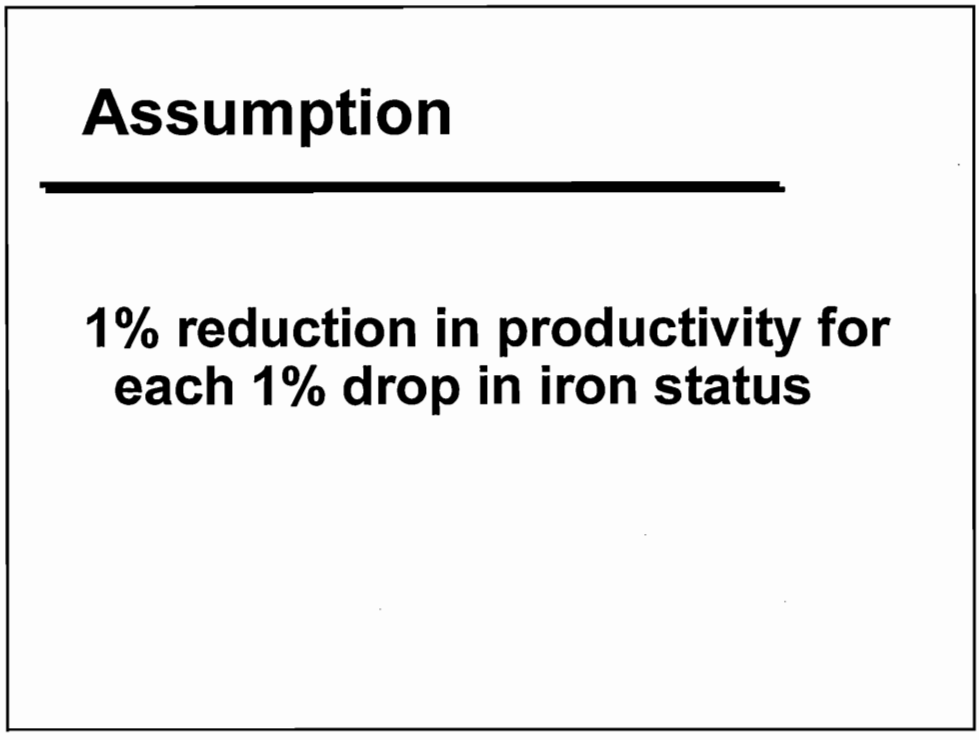
If current levels of stunting remain unchanged over the next five years, Ghana will lose 297 million dollars in future economic production as the direct result of the poor nutrition of its children.



Iron Deficiency Anaemia

Iron deficiency is another nutritional problem that has far-reaching effects on productivity. In Ghana, iron deficiency is most common in young children and in women of childbearing age.

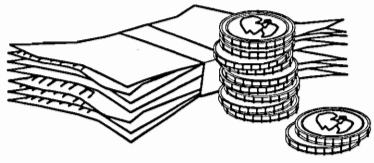
Data from national surveys indicate that about 81% of children under five years of age, 17% of non-pregnant women, and 69% of pregnant women are anaemic.



Scientific research shows that there is at least a 1% reduction in productivity for each 1% drop in iron status.

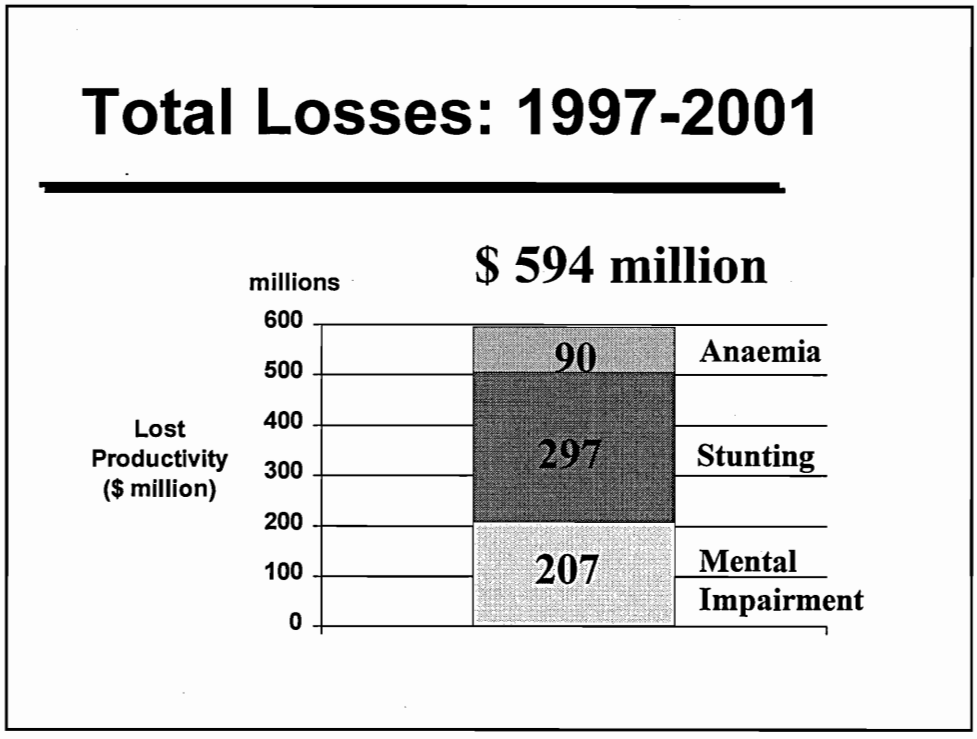
Losses Due to Anaemia

1997-2001:



Female labor force: $ 90 million

We project that between 1997 and 2001, 90 million dollars will be lost in agricultural productivity as a consequence of iron deficiency anaemia in the female labor force.

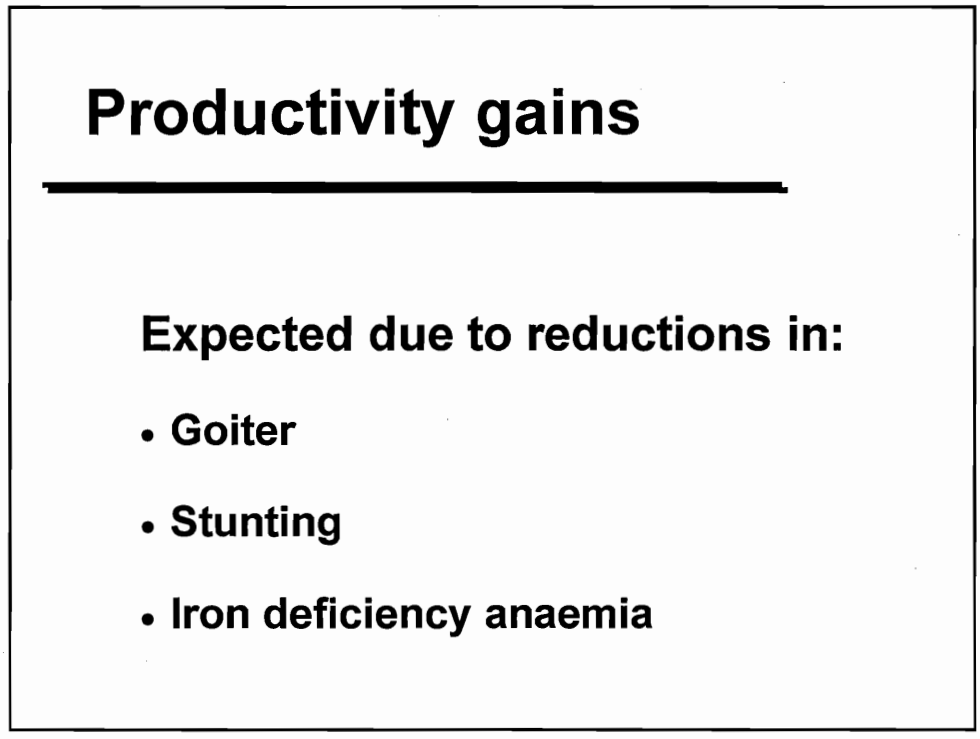


Summary of Consequences

Thus, the total cost of malnutrition to worker productivity in Ghana is:

- 207 million dollars due to mental impairment,
- 297 million due to stunting, and
- 90 million due to iron deficiency anaemia.

This is a total loss of 594 million dollars—only over the five year period and only for the problems examined here.



Benefit: Productivity Increases

Now let's look at the productivity gains that can be realized by reducing goiter, stunting, and iron deficiency anaemia.

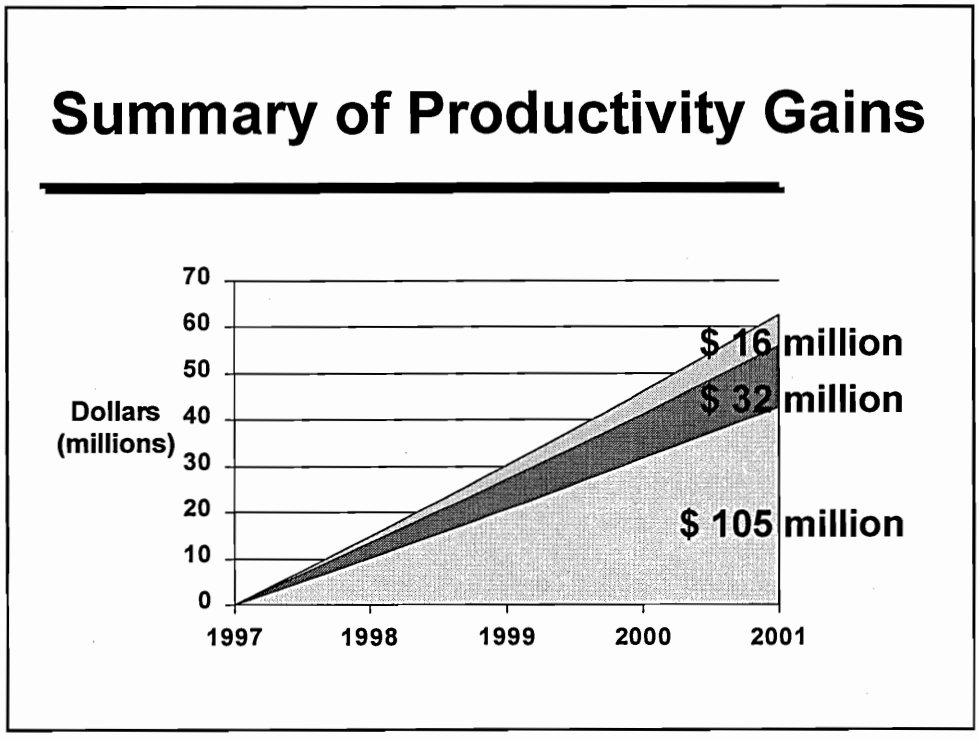
Proposed Targets for 2001:

Virtual elimination of iodine deficiency

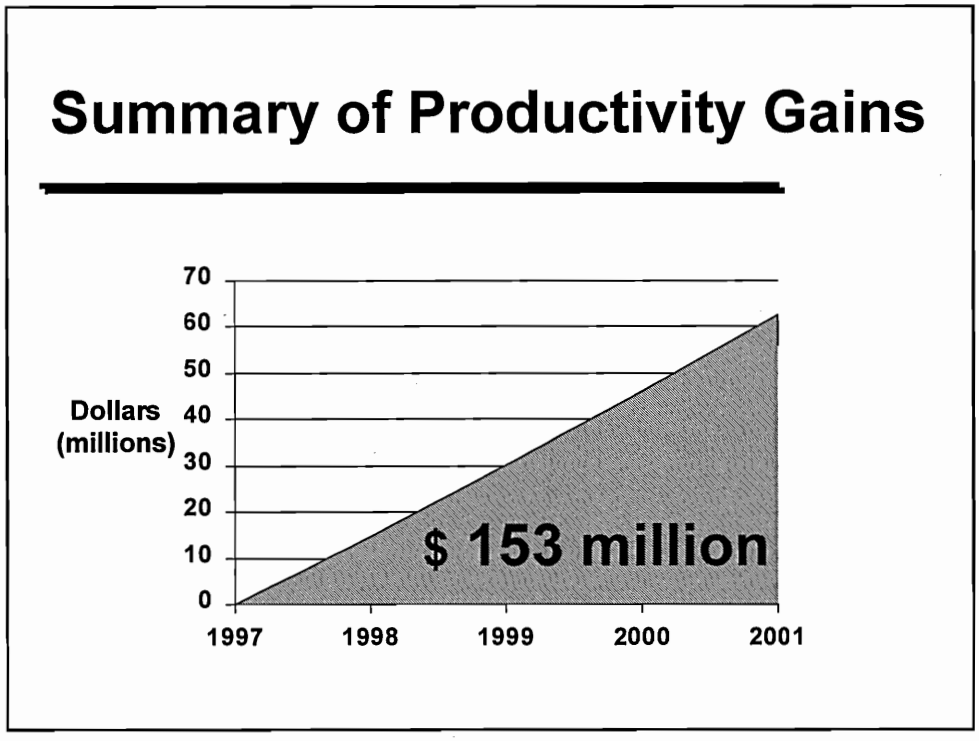
Reduction of severe and moderate stunting by 1% point per year

Reduction of anaemia by a third

In calculating these potential benefits, we assume that these proposed targets will be achieved by the year 2001: the virtual elimination of iodine deficiency in pregnancy, a reduction of both severe and moderate stunting by 1 percentage point per year, and the reduction of anaemia in women by one third.



Summarizing all the potential productivity gains over the five year period, Ghana is expected to gain: 105 million dollars from the reduction of iodine deficiency, 32 million dollars from the reduction of stunting, and 16 million dollars from the reduction of iron deficiency.



This is a total of 153 million dollars in present value gained over five years.

Solutions

Solutions

If Ghana is to become a middle-income country by the year 2020, conscious efforts must be made to reduce malnutrition, particularly in infants, children, and women of reproductive age.

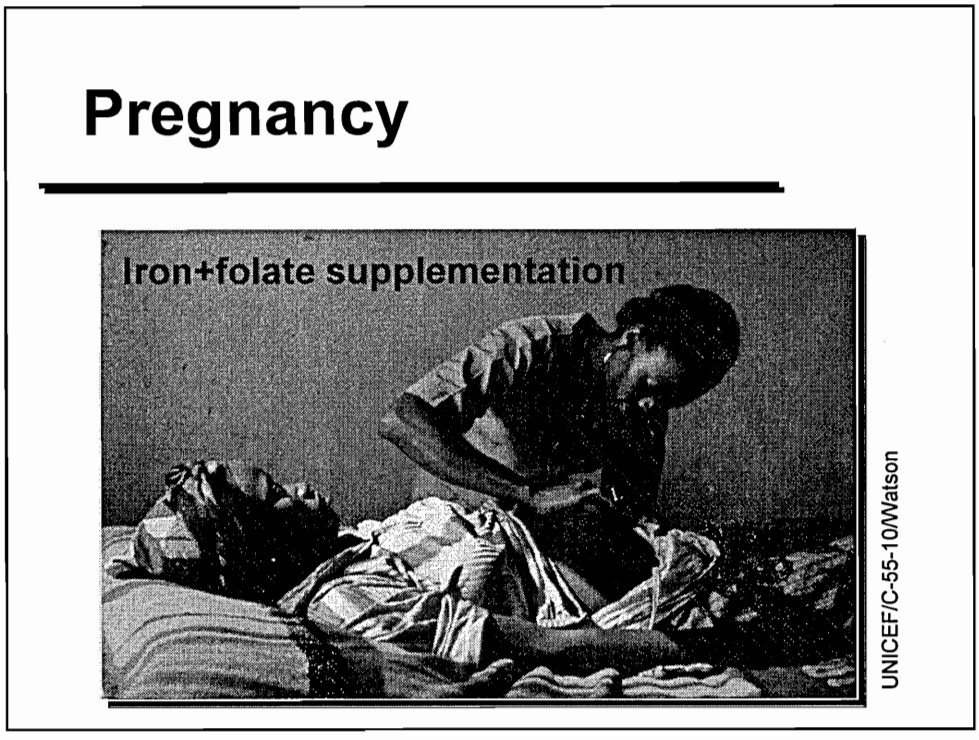
Promote Better Infant Growth

Optimal breastfeeding

Appropriate child feeding practices

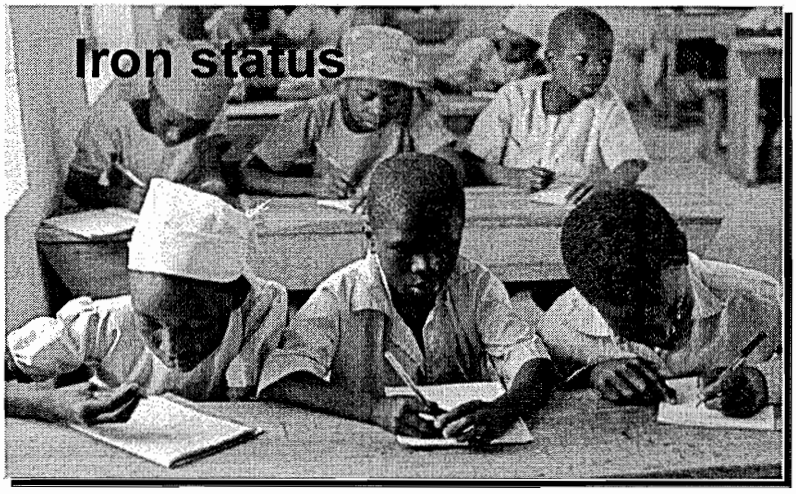
Specifically, intervention programs should:

- promote better infant growth through optimal breastfeeding and appropriate infant feeding practices,



• strengthen the ongoing iron-folate supplementation program for pregnant women,

Infants/school children



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- address the deficient iron status of infants and school-age children,

Lactation

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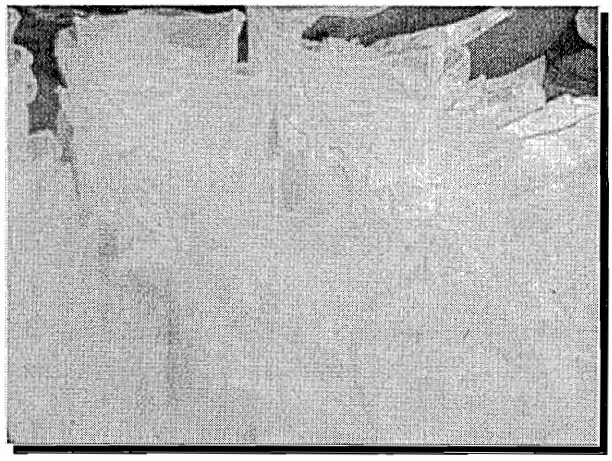
• strengthen the vitamin A supplementation program for lactating women and children, and

Iodated Salt



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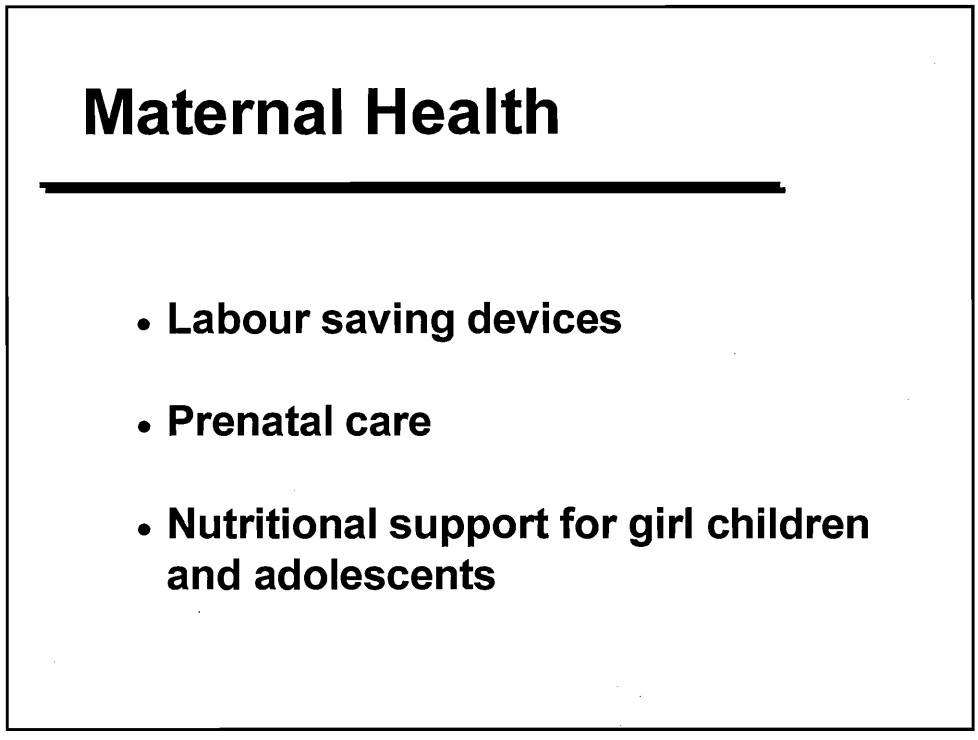
- implement a national communication strategy to promote the consumption of iodated salt.

Household Food Security

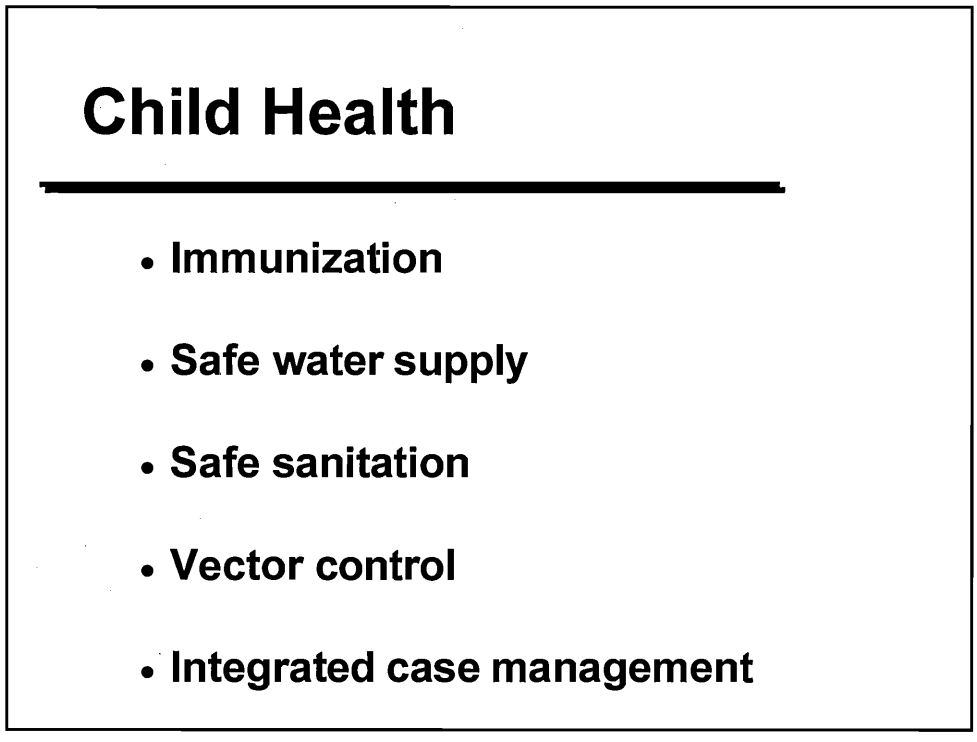
- **Income generating activities**
- **Increased household food production**
- **Appropriate food utilisation practices**
- **Timely relief from drought and other emergencies**

These strategies will only be successful and sustainable if they are coordinated with other programs such as those design to improve:

- household food security through: income generating activities, increased household food production, appropriate food utilization practices, timely relief from drought, and other emergencies;



• programs designed to improve maternal health through: labor saving devices, prenatal care, and nutritional support for girl children and adolescents; and



• programs designed to improve child health through: immunization, safe water supply, safe sanitation, vector control, and integrated case management.

Costs and Benefits

Costs Compared to Benefits

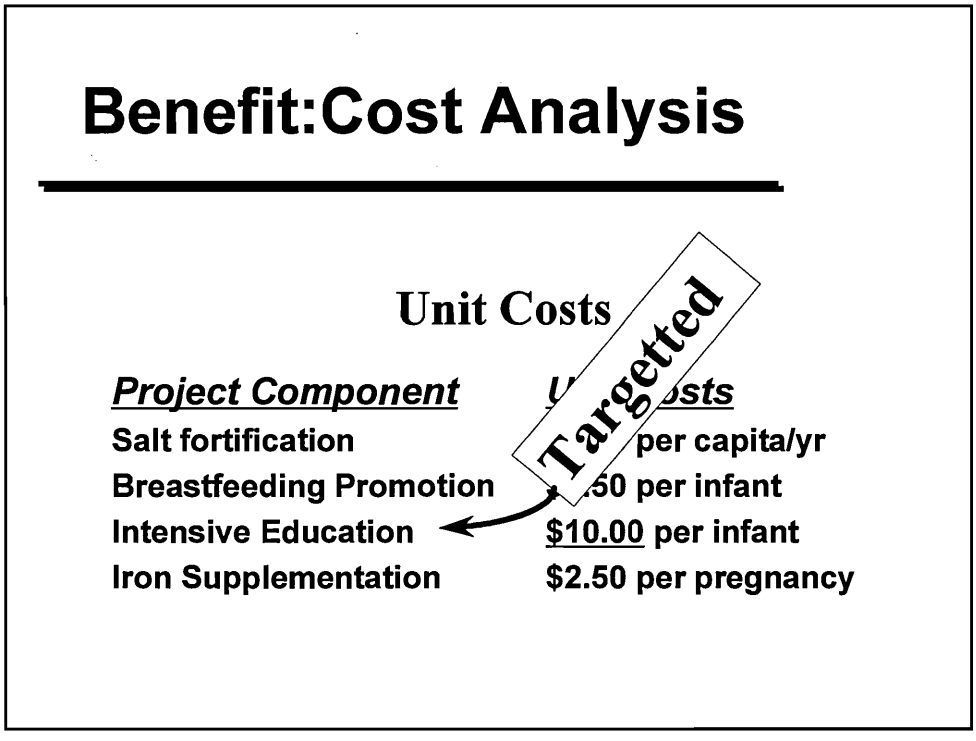
The costs of implementing these programs are considerable, but even if we only count the economic productivity benefits, these programs will pay for themselves many times over.

Benefit:Cost Analysis

Unit Costs

Project Component	*Unit Costs*
Salt fortification	**$0.05 per capita/yr**
Breastfeeding Promotion	**$2.50 per infant**
Intensive Education	**$10.00 per infant**
Iron Supplementation	**$2.50 per pregnancy**

The unit costs of the project components estimated from the literature are shown in this table.



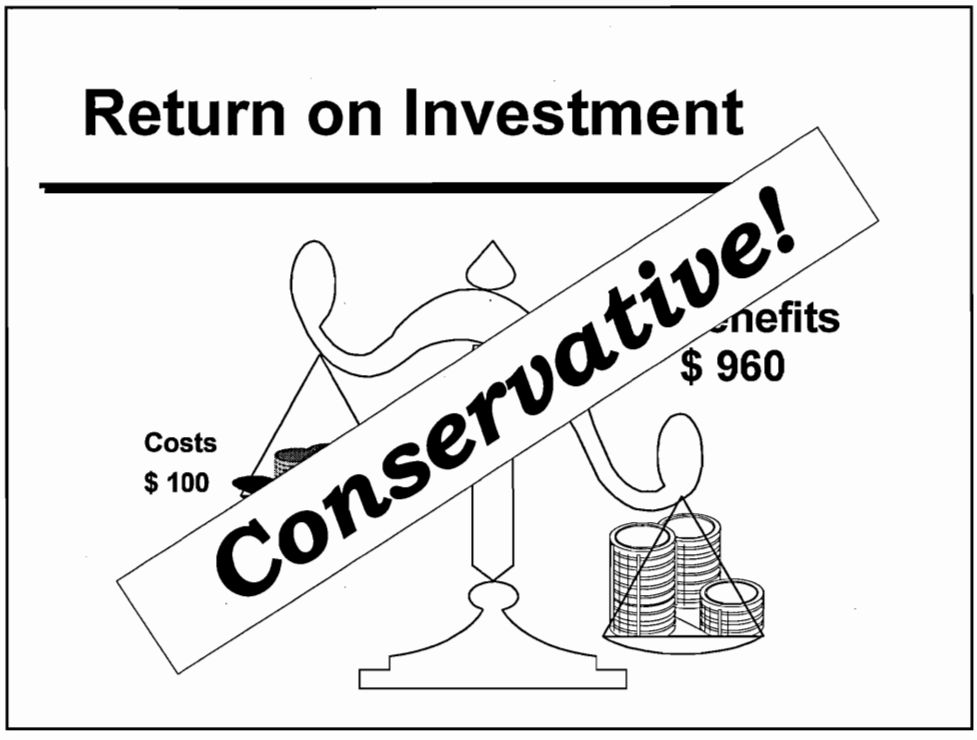
Targeting the more expensive and intensive components of the program will reduce overall costs and will maximize benefits.

Benefit:Cost Ratios

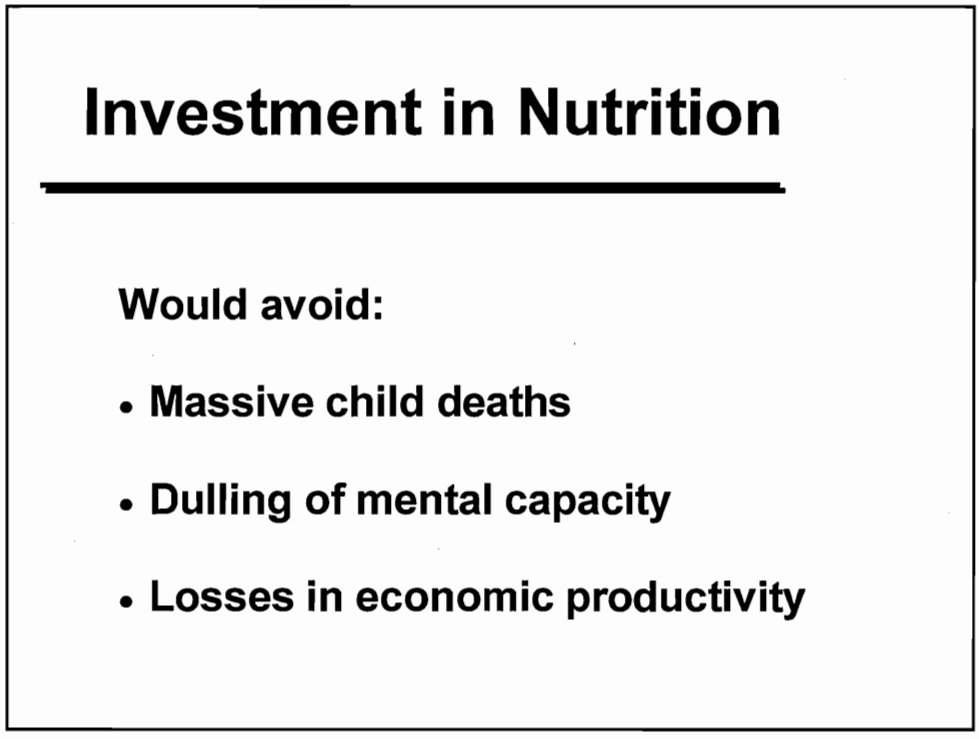
$ millions

Disorder	*Benefit*	*Cost*	*B:C*
IDD	105.3	6.6	16.0
PEM	32.3	5.2	6.2
Anaemia	15.5	5.4	2.9
Total	153.2	16.0	**9.6**

The five-year cumulative benefits and costs of each intervention component with an impact on economic productivity are summarized in this table. Compared to the 153 million dollar estimated five-year cumulative benefits, the 16 million dollar cost is relatively small, making this an investment opportunity with a benefit:cost ratio of 9.6. Every 100 dollars invested will generate over 960 dollars just in economic productivity gains.



Given the conservative nature of many of our assumptions and the omission of many benefits, this must be considered an underestimate of the true value of this investment.



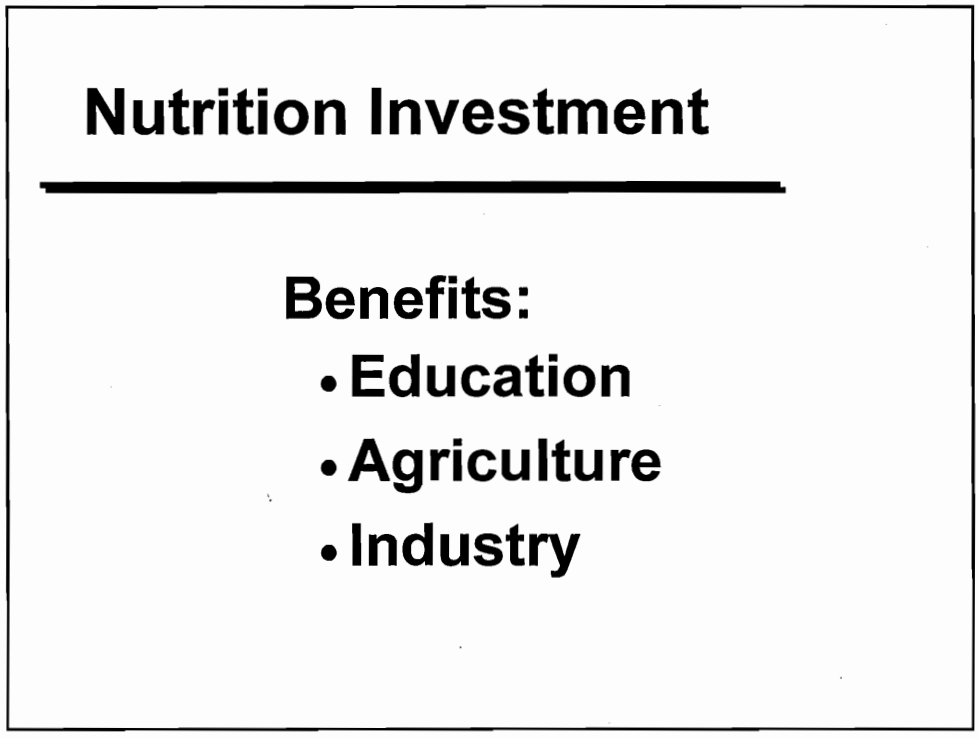
Summary

In summary, our presentation shows that an adequate investment in nutrition in Ghana would avoid massive numbers of child deaths, a tragic dulling of mental capacity, and huge losses in economic productivity.

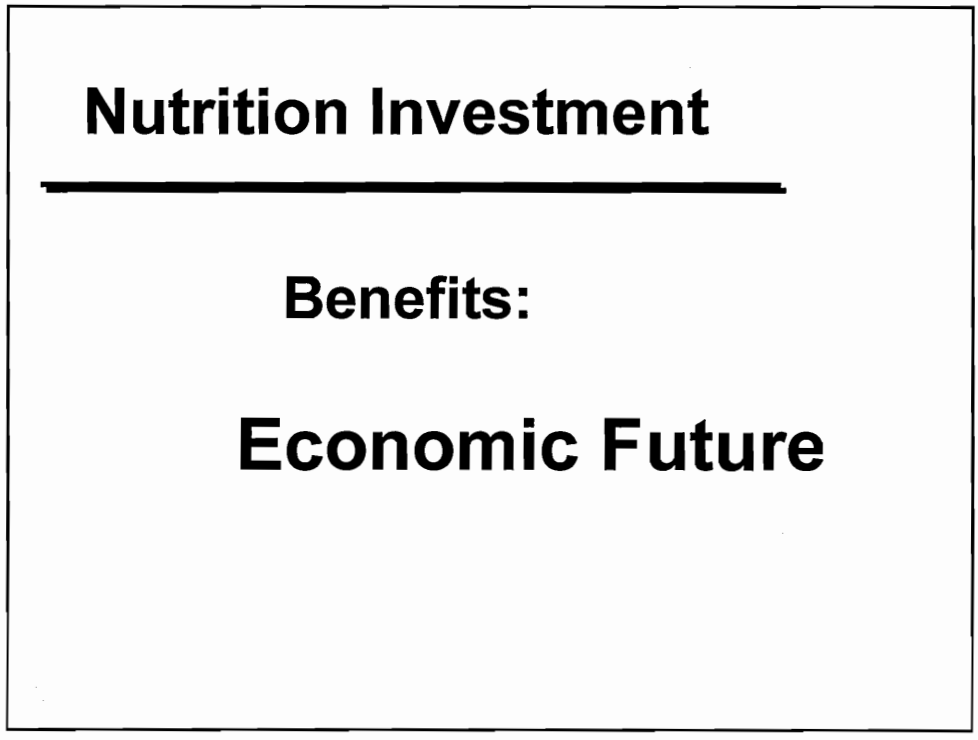
Conditions for change

- **Strong political commitment**
- **New investment strategy**

This situation will only change if there is a strong political commitment and a bold new investment strategy in nutrition.

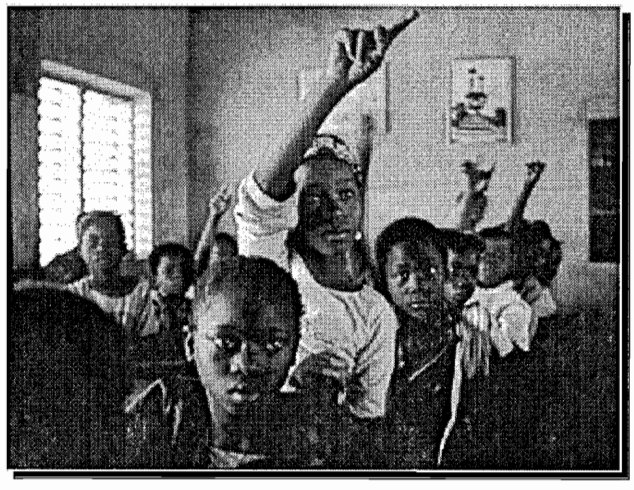


This investment will reap benefits far outweighing the cost, benefits to education, agriculture, and industry.



The benefits to the economic future of the country are also considerable.

Ghana's 2020 Vision



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Attainment of these social and economic benefits is our only hope of making Ghana's economic vision for the year 2020 a reality.

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