Impact of early childhood health and nutrition on access to education in developing countries

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Abstract

Children in developing countries must negotiate threats from a number of diseases before they reach school age. More than 50% of child deaths are caused by pneumonia, diarrhoea, malaria, measles, malnutrition and human immunodeficiency virus (HIV). For those who survive, health and nutrition can have an impact on their subsequent education, most significantly by affecting their chances of enrolling in school. In many resource-poor countries, physical and mental disabilities can effectively prevent children from attending school. These result most commonly from iodine or folate deficiency or rubella infections *in utero* or from cerebral malaria, polio or meningitis infections postnatally. Less debilitating conditions can influence the likelihood and timing of enrolment. These include undernutrition, less severe malaria infection and HIV-related orphanhood. The majority of all these conditions are treatable or preventable. Tackling these health and nutrition problems through programmes during infancy and early childhood has the potential to make a major contribution to ensuring all the world's children have access to basic education.

Keywords child development; developing countries; education; health; nutrition

Introduction

Child survival has long been an aim of programmes implemented by governments and development agencies. However, beyond issues of mortality, the role of health and nutrition in promoting child development and educational outcomes is increasingly being recognised.[1,2] The most significant impact is when children are prevented from taking their first steps towards a basic education, where conditions in infancy and early childhood affect their chances of enrolling in school. This paper reviews the main health and nutrition problems facing children from before birth until they enter school and discusses how these conditions affect children's access to education.

Health and nutrition problems in preschool children

It is becoming apparent that treating health and nutrition problems in pre-school children (<5 years old) is important for two reasons. First, these children account for more than 50% of the global gap in mortality between the poorest and richest quintiles of the world's population; and second, they bear 30% of the total burden of disease in poor countries. There are an estimated 600 million preschool children worldwide and they have several-fold higher case fatality rates for many infections.[3] Therefore, keeping them healthy gives them a better survival rate in childhood and adulthood.

Out of 100 children born in each year, 30 will most likely suffer from malnutrition in their first 5 years of life, 26 will not be immunised against the basic childhood diseases, 19 will lack access to safe drinking water and 40 to adequate sanitation and 17 will never go to school. In developing countries, every fourth child lives in abject poverty in families with an income of less than $1 a day. As a consequence, nearly 11 million children each year – about 30,000 children a day – die before reaching their fifth birthday, mostly from preventable causes. Of these children, 4 million die in their first month of life. Of the 10.5 million children that died in 1999, 99% were from developing countries and of these 36% were in Asia and 33% in Africa. In many of the world's poorest countries, child mortality rates have either not changed or else they have worsened. In sub-Saharan Africa, child mortality averages 173 deaths per 1000 live births, and in South Asia 98 deaths per 1000 – many times the industrialised country average of seven deaths per 1000. More than 50% of all child deaths (<5 years old) are due to five communicable diseases, which are treatable and preventable. These are pneumonia, diarrhoea, measles, malaria and human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS).

For those who survive, poor health and nutrition can affect their chances of enrolling and attending school. This impact is considered in the following section.

Impact of health and nutrition on access to education

Common conditions of poor health and nutrition can affect education in a number of ways. The majority of children in the world suffer from conditions of health and nutrition that affect their learning in school. But many do not even have the opportunity to attend school in order to complete a course of basic education.

Children who do not attend school fail to do so for many reasons. These include the direct costs of sending children to school, requirement for children to work, conflict and the perception of the value of education and of school quality. However, both disease and poor nutrition can have a major effect on children's chances of enrolling in school.

There are a number of ways in which the health of children before they enter school can affect the likelihood of enrolling. For example, parents may choose not to invest in the education of children who are too ill to benefit from it. Similarly, where illness has moderate effects on mental or physical abilities, parents may judge that children are unlikely to succeed at school and prioritise the education of their more able siblings. But one of the most apparent ways in which children's chances of enrolling in school are affected by ill-health is where disease leads to serious physical or mental disabilities. Such conditions typically affect children's educational opportunities to a greater extent in low-income countries than in high-income countries. This is not only because poorly-resourced schools lack the facilities to cater for the special needs of children with disabilities but also because of the stigma that can be attached to these children – either from parents who do not think the child's education is worth investing

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in or from fellow schoolchildren and teachers who do not wish to have them in their schools.[4]

Little is known about the extent of disabilities in low-income countries but evidence suggests that a significant number of children are affected. For example, studies have found a prevalence of serious mental retardation ranging from five children per 1000 in Bangladesh, to 17 per 1000 in Jamaica, 19 per 1000 in Pakistan[5] and a study in South Africa[6] found around 35 children per 1000 had intellectual disabilities. We now consider the diseases of early childhood that can influence a child's chances of enrolling in school, either by causing severe physical or mental retardation or through more subtle effects that affect parental decisions about their children's schooling.

Nutrition and school enrolment

Micronutrients

It is clear that micronutrient deficiencies and their interactions with infections play a major role in the cause of disability in low-income countries. The World Health Organization (WHO) estimates that vitamin A deficiency causes around 350,000 (~70%) of new cases of blindness or partial blindness occurring in children each year. In addition to the direct effects of vitamin A deficiency on vision, it also contributes to childhood disability by increasing the risk of measles and other serious childhood infections that can result in long-term disability. Currently 76% of children aged 6 – 59 months receive vitamin A supplementation in least developed countries, with figures of 58% in South Asia and 64% in sub-Saharan Africa (Table 1).

The public health benefits of adequate iodine intake have long been understood but iodine deficiency remains prevalent in many low-income countries and is the leading cause of preventable mental retardation worldwide. *In utero* exposure to maternal iodine deficiency during the first two trimesters of pregnancy can damage the developing brain, causing permanent cognitive disability as well as motor, hearing and speech disabilities.[7] Such iodine deficiency disorders can be totally eliminated by preventative measures using iodine administered in salt, oil or some other vehicle. In 1996, the WHO reported that 56% of the population of 83 developing countries now had adequate access to iodised salt. This represents an

Global nutrition indicators for early childhood[31]

	% of infants with low birthweight 1998–2004*	% of children (1996–2004*) who are:			% of under-5s (1996–2004*) suffering from:					
		exclusively breastfed (<6 months)	breastfed with complementary food (6–9 months)	still breast-feeding (20–23 months)	Underweight		wasting	stunting	Vitamin A supple-mentation coverage rate (6–59 months) 2003	% of households consuming iodised salt 1998–2004*
					Moderate & severe	severe	moderate & severe	moderate & severe		
Summary indicators										
Sub-Saharan Africa	14	30	67	53	28	8	9	38	64	64
Eastern and Southern Africa	14	41	69	58	29	8	7	41	68	60
Western and Central Africa	15	20	65	48	28	9	10	35	60	68
Middle East and North Africa	15	29	60	23	14	3	6	21	-	58
South Asia	31	38	45	69	46	16	14	44	58	49
East Asia and Pacific	7	43	44	27	15	-	-	19	73	85
Latin America and Caribbean	9	-	45	26	7	1	2	16	-	86
CEE/CIS	9	22	45	26	5	1	3	14	-	47
Industrialised countries	7	-	-	-	-	-	-	-	-	-
Developing countries	17	36	51	46	27	10	10	31	61	69
Least developed countries	19	34	63	65	36	11	10	42	76	53
World	16	36	51	46	26	10	10	31	61	68

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Table 1