

Education and food security

Faiçal BOUTAYEBA,
Department of commerce
The African university of Adrar
boutayeba_f@yahoo.fr

Abstract:

Education is closely related to food security. On one hand, food insecure children who are undernourished or malnourished cannot attend school especially in rural areas, and even they do so, it is difficult for them to succeed in developing their cognitive skills compared to peer. On the other hand, education is seen as a crucial key element to achieve food security. It is therefore important to focus on primary education, female education, higher education in agriculture and last and not least on informal education of family farmers.

الملخص:

توجد صلة وثيقة بين التعليم والأمن الغذائي. فمن جهة، فإن الأطفال الذين هم عرضة لسوء التغذية ليس بإمكانهم الالتحاق بمقاعد الدراسة خاصة في المناطق الريفية. وحتى لو حصل ذلك، فإن حظوظهم في النجاح ستكون محدودة مقارنة بزملائهم الآخرين. ومن جهة أخرى، يعتبر التعليم عاملاً رئيسياً في تحقيق الأمن الغذائي. لذا فإنه من الضرورة بمكان أن يتم التركيز على التعليم الابتدائي، تعليم الإناث، التعليم الزراعي في الجامعات وكذا التعليم غير الرسمي للفلاحين.

Keywords: education, undernourishment, food insecurity, food security, developing world.

Introduction:

The widespread food insecurity in poor and developing countries is still one of the great challenges in the era of globalization. While rich people in developed countries have almost ensured their basic needs including food access and are enjoying luxury goods and services, impoverished people in the other regions worldwide are yet facing a critical crisis that threatens their lives. In fact, hunger is largely prevalent in many societies in sub-Saharan Africa and south Asia.

In such conditions, how can undernourished children attend school and obtain better results? Evidence suggests that low birth weight, protein-energy malnutrition, anemia and iodine deficiency all impair cognitive abilities. What to do in such situation?

Education is perceived as a key factor to achieve food security. Given the benefits that yield education, it can strongly contribute to this purpose.

I. Food security: A background

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their daily needs and food preferences for an active healthy life (world food summit, 1996).

This exhaustive definition is due to past attempts to perceive and reveal facets, roots and dynamics of food issue worldwide. During the last three decades, focus of researchers and policy makers as well has been significantly evolved. According to food and agriculture organization (FAO, 2006), this can be summarized in the following points:

- The notion has emerged in amidst seventies when the world food summit (1974) defined food security in terms food victualling.

- In 1981, Amartya Sen emphasized in his theory of famines the importance of individual rights effect on food access like production-based resources, work, marketing and transfert.

- In 1983, based on Sen's Contributions, FAO redefined food security as to ensure for every one and in any moment the physical and economic access into nutritional diet that he needs.

- In 1986, the World Bank published an important rapport highlights the distinction between chronic end transitional food insecurity.

- In 1996, the definition mentioned earlier adopted by the world food summit is regarded as a multidimensional definition in which main components are:

- 1- The availability of food, or the amount of food that actually exists.

- 2- People's physical, economic and social access to food (the capacity to produce / buy / acquire food) and the stability of this access over time.

- 3- The quality or adequacy of that food.

- 4- people's ability to utilize this food, including the patterns of control over who eats what and the physical ability to absorb nutrients.

Unless these four dimensions actually exist in the main time, the people would be indeed food insecure. Whilst the Country for example has available food and some people

miss access to that food, So It is worth nothing to be Considered as a food secure Country.

In fact, food insecurity is a huge and complex notion that has various facets, meanings and roots. Nevertheless, merely a unique result could be occurring among affected citizens, that is food crisis.

It is useful therefore to clarify main concepts that imply food insecurity:

*** Undernourishment, malnutrition and hunger:**

Undernourishment is when there is insufficient energy intake, it is also an indicator sometimes used to assess food security levels. Based on national food production figures, it is basically a measure of food availability (postnote, 2006).

Nevertheless, malnutrition is the condition caused by deficiencies or imbalances in energy, protein and / or other nutrients. Signs include wasting (thinness), stunting (low weight for age due to wasting / stunting) (postnote, 2006).

Concerning hunger, it is not mere absence of food. According to Amartya Sen (2006), “Hunger is best seen in terms of failure of people’s entitlements that is their failure to establish command over an adequate amount of food and other necessities. Person money has little means of commanding food if he or she has no job, no other sources of income, no social security. The hunger that will result can coexist with a plentiful supply of food in the economy and the markets “

*** Famines, starvation and poverty:**

Equally according to Sen (1999), famines imply starvation, but not vice versa. And starvation implies poverty, but not vice versa. Starvation is a normal feature in many parts of the world.but this phenomenon of “regular”

starvation has to be distinguished from violent out bursts of famines.

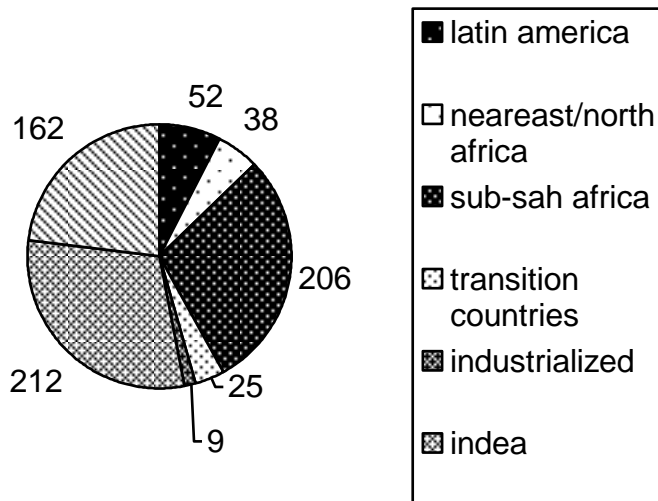
Also, it is possible for poverty to exist and be regarded as acute, even when “serious” starvation occurs. Starvation, on the other hand, does imply poverty since the absolute dispassion that characterizes starvation is more than sufficient to be diagnosed as poverty.

As a sign of complexity of food insecurity problem, while the last famine in India was in 1943, undernourishment today is nearly twice as high in India as in sub-Saharan Africa which is already ravaged by wars and famines (Sen, 2007).

II. Food insecurity in the world:

Food insecurity is still a great challenge in the world. However, according to FAO report (2006), the number of undernourished people remains stubbornly high. In 2001-03, FAO estimates there were still 854 million undernourished people worldwide: 820 million in the developing countries, 25 million in the transition countries and 9 million in developed countries.

Undernourished 2001-03 (million):



Source: FAO, 2006.

Indeed, food insecurity is most prevalent in poor regions in the world especially in sub-Saharan Africa, but it represents equally a problem also in wealthier regions despite available local production and ability to import from abroad. That is why the WFS definition discussed above recognizes the crucial component of access rather than mere availability.

In the United States –for instance- nearly 35 million people, including 13 million children, were hungry or living on the edge of hunger in 2002. Overall, 11.1% of US households (12.1 million households) experienced food insecurity or hunger in 2002, and black (22%) and Hispanic (21.7%) households suffered from food insecurity or hunger at double the national average. (FRAC, 2004)

Prevalence of undernourishment and progress towards WFS in developing countries and countries in transition

	Total population (million)		Number of people undernourished (million)		R1	% undernourished in total population		R2
	1990-1992	2001-2003	1990-1992	2001-2003		1990-1992	-2001-2003	
Developing World	4058.7	4868.9	823.1	820.2	1.0	20	17	0.8
Asia/pacific	2815.2	3297.4	569.7	524.0	0.9	20	16	0.8
Latin America	443.4	528.9	59.4	52.4	0.9	13	10	0.7
Near east/north Africa	322.8	407.4	25.0	37.6	1.5	8	9	1.2
Sub-Saharan Africa	477.3	635.3	196.0	206.2	1.2	35	32	0.9
Countries in transition	413.6	408.9	23.4	24.7	1.1	6	6	1.1

Source: the state of food insecurity in the world, FAO, 2006, pp 32-34.

R1: ratio current/baseline number of undernourished (ratio for WFS target = 0.5).

R2: ratio current/baseline prevalence of undernourished (ratio for WFS target = 0.5).

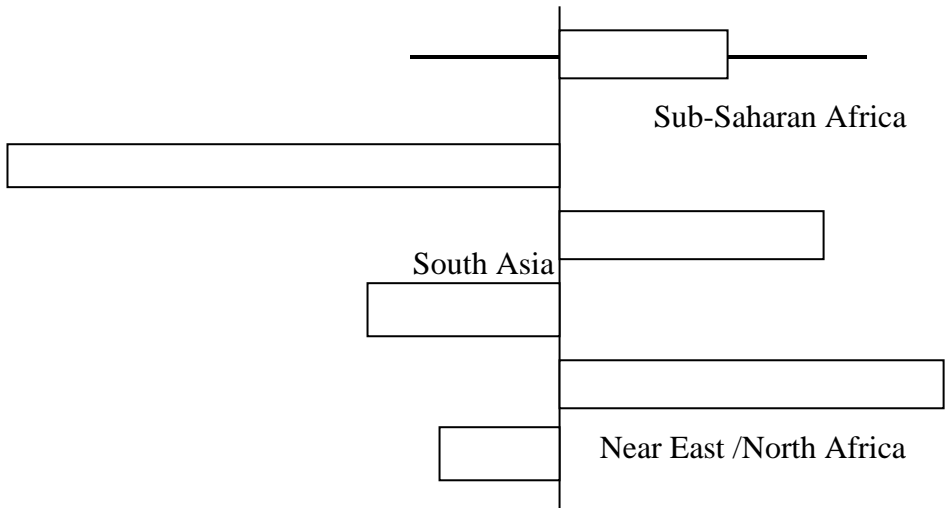
Concerning the other regions, it seems that countries in transition have in sum low levels of undernourishment as a proportion of total population (6%) than developing countries (17%) in 2001-2003. However, they lag behind them in terms progress to achieve world food summit target (0.5%). [ratio current (2001-2003) / base line (1990-1992) prevalence of undernourishment] 1.1% in former versus 0.8% in later (Table above).

Inside developing countries, the group of Near East and North Africa recorded the lowest prevalence of undernourishment (9%) in last period while sub-Saharan Africa has the highest one (32%). Notwithstanding this large gap, It is the second group not the first that made better achievement to meet the WFS target, both in terms ratio of current / base line number of undernourished and current / baseline prevalence of that one. (Table above)

III. Undernourishment as an obstacle to education:

Evidence worldwide suggests that nutrition is closely interrelated to education. In region where undernourishment is prevalent and affects a large number of populations, school attendance is often found low. Sub-Saharan Africa -for instance- is largely affected by undernourishment, and in the main time people are mostly illiterates.

Undernourishment and school attainment by region,
2000



Prevalence of undernourishment
completed

Number of years of school
completed

Source: the state of food insecurity in the world, FAO, 2005, p 14.

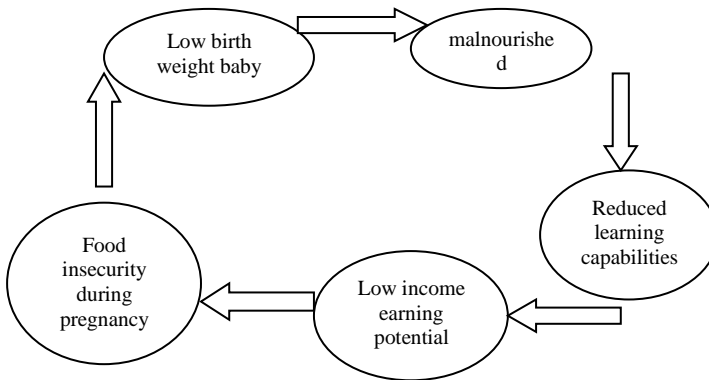
There are some 300 million children are chronically hungry in the world and 130 million of them do not go to school. Two out of three are girls. Roughly 150 million children of primary school age begin school but drop out before completing four years of education. This means that they have not acquired even basic literacy and numeracy skills (Anette Haller, 2002).

This reduced learning capability which is due to undernourishment in childhood will in turn prevent affected people to earn high incomes. So they will remain poor and likely to be food insecure. This effect is aggravated for girls

because in such situation, they will enter their first pregnancy malnourished, and to give birth to underweight babies.

Hence, undernourished girls are victims of the hunger cycle (figure below) that is somewhat a kind of fatality especially in poor rural areas worldwide.

The hunger cycle:



Source: Anette Haller, food for education and rural development, FAO/UNESCO seminar, Thailand, 2002, p 128.

The hungry children in rural areas walk often long distance with empty stomachs. Many of them cannot afford to bring food from home in order to eat during the day. When arrive to school, they will not be able to concentrate inside classroom and will fall asleep because of hungry. “This syndrome generally referred as “Short-term hunger” has been shown to affect children’s cognitive functions and, most likely their learning achievements”(Anette Haller, 2002).

Accordingly, the consequence in such conditions and in absence of effective initiatives to help those pupils, most of them will drop out forever.

Thus, hunger forced and still forces poor and undernourished children to

attend school and in most cases join labor market in order to help their families to enhance at least food consumption. While girls help mothers in household tasks and fetch firewood and safe water, boys help fathers in farms otherwise they look for any other paid activities. Evidence shows clearly how children labor becomes an international problem that undermines world

community efforts to achieve universal primary education and reduce poverty in all nations.

Global child labor; aged 5-14, 2000

Source: Kaushik Basu et al,” the global child labor problem”, WBER, World Bank Washington, 2003, p 157.

Besides, among the issues that are in vogue in this

gender	Total number of children(million)	Child labor (million)	Child labor participation rate (%)
Boys	616.4	97.8	15.9
Girls	583.1	88.5	15.2
all	1 199.4	186.3	15.5
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frame is the “timing” of in malnourishment a child hood that has the most influence on cognitive development.

Nutritionists and physiologists began to examine the issue of timing in the 1970's. Some argue that the time from early gestation to the first six months of life is the most critical for brain development. Glewwe et al (2001) estimates suggest that the period from 18 to 24 months may be critical.

In fact, more research is needed to determine the subtle period because this will facilitate intervention that can efficiently avoid future repercussions.

In order to tackle the problem of undernourishment, and thus to help children from poor backgrounds in achieving better school attainment, many initiatives at national and international levels have been carried out in most affected regions. In the following, two examples are chosen:

1. Food for education program:

For 40 years, world food program (WFP) has addressed the problem by providing food to school children in poor countries worldwide. Working with national authorities and NGOs, WFP uses food aid as a direct input to attract children to school in rural areas where enrolment ratios are the lowest. In 2001, WFP feed over 150 million children in schools in 58 countries. (Anette Haller, 2002).

Among possible FFE interventions are take home rations targeted to girls, orphans and other vulnerable children who attend school regularly, in school meals or snacks to reduce short term hunger along with associated cognitive impediments (Flora sibanda, 2004)

2. Brazil's Bolsa Escola Program:

It was created in April 2001 within the broader context of the social development initiative known as projeto

ALVORADA. The rules of the program are simple, households with monetary income per capita of less than 90 reais (R\$) per month (equivalent to half the minimum wage when the law was introduced) and with children age 6-15 qualify for the program, provided that children attend school regularly, the monthly benefit is R\$ 15 per child attending school, up to maximum of R\$ 45 per household. Transfers are generally paid to mother (Bourguignon et al, 2003).

It is estimated that some 10 million children (in 6 million household) will benefit from this program; this represents about 17% of the population, reached at a cost of less than 0.5 % of GDP.

IV. Education as a key factor of food security:

Education is perceived today as a sine qua none condition to achieve sustainable food security and reduce undernourishment. The strategies that neglect the role of education would inevitably doom to failure.

There are many channels by which education can successfully contribute to such goal. In light recent studies, efforts in this frame should be focusing on the following points:

* Primary education:

This goal is vital for all school-age children in all regions without exception. When they succeed in completing this early stage with better cognitive skills, they would be able to attain the next stages that may enable them to hold jobs with high incomes. Thus, people from impoverished households will help themselves and their families to improve livelihood and food conception.

In rural regions, primary education has another role to play in such case. “Research shows that basic education affects small landholders and subsistence farmer’s productivity immediately and positively, and that a farmer with four years of elementary education is –on average- 8.7% more productive than a farmer with no education. Moreover, farmers with more education get much higher gains in income from the use of new technologies and adjust more rapidly to technological changes” (Gospirini Lavinia, 2000).

Since rural needs are different from that of urban ones, It is therefore necessary to make school curricular consistent with such needs.

* Female education:

Education of girls is the most powerful factor to break the vicious cycle of hunger mentioned earlier. The government intervention is –however- important by implementing effective measures when impoverished girls are not able to attend Scholl because of poverty and hunger. Many studies recognized such intervention; “Dreze and Kingdon find that school participation among girls is 15% higher when the local school provides a mid-day meal and that girl’s schooling responds more to such initiatives than boys schooling”(Kaushik Basu, 2002).

Besides, a recent study of IFPRI (2000) examined the factors that helped reduce child malnutrition by 15% in the developing world between 1970 and 1995, It found that increases in women’s education accounted for 43% of the total reduction in child malnutrition, while improvements in food availability can in a distant second to women’s education, contribution 26% to the total reduction.

These results assert the importance of investing in female's human capital. Numerous are the benefits of this investment; an educated mother has often few children with more and better care of their nutrition, health and education. If she works, she uses an important sum of her income to household needs compared to husbands and so on.

* Higher education in agriculture:

Since undernourishment is strongly linked with under-education, so obviously food security rests on science security. Therefore investing in agricultural higher education is valuable.

University in this context has two distinct but related tasks. On one hand, training students in agriculture in order to modernize this field, and that by using new technologies and also to help small-scale farmers. In many developing countries, higher education in agriculture is at a crossroads, financial constraints are severe; at the same time the demand for higher quality education has never been greater (FAO, 2007). On the other hand, university is equally an institution of scientific research. Thus, it is urgent to strengthen this role by providing required facilities for researchers.

Research is justified by its high returns, a study in Africa carried out by the new partnership for Africa's development (NEPAD) found that each dollar spent on agricultural research on maize, sorghum, potatoes, beans, wheat and cowpeas for example has generated returns ranging from 16% to 135% (Hemali Batra, 2006).

* Informal education in agriculture:

Empowering farmers in rural areas with relevant education in agriculture is an important tool to strengthen the

other steps in the framework of a global strategy that endeavours to realize a national food security. “Several studies have shown that farmer training has important effects on agricultural production. A 1992 study on the value of education in small-scale agriculture in Nigeria found that an increase in the average education of a farmer by one year increases the value added to agricultural production by 24%” (FAO2007).

So, formal education cannot alone eradicate all forms of food insecurity. It is necessary to foster and enlarge informal education especially for those who are engaged in farming in rural regions.

Even though country receives regular and considerable foreign aid, this should not be perceived as a good solution instead of national commitment and responsibility. “Food aid is merely a short-term solution to the problems of poverty and malnutrition. Educating family farmers themselves and empowering them with the knowledge and the tools for producing healthier and plentiful food is an effective long-term solution” (Hemali Batra, 2000).

Conclusion:

Evidence shows the causal relationship between education and food security. In poor countries where undernourishment is prevalent, education attendance and attainment are often very weak.

Despite the tremendous efforts locally and internationally to tackle the problem of hunger, this is still widespread phenomenon worldwide. Therefore it is important to rethink such efforts and focusing more on the role of education. First, it is pressing to provide sufficient

food aid for those who are victims of hunger especially school-age children in rural areas.

Empowering all children with elementary education is one of their fundamental rights. For rural children, it is useful to adapt school curricula in this stage to local needs.

Moreover, investing in female's human capital is among the key factors of food security. Also, it is important to train students in agricultural education and enable researchers to innovate new methods and technologies.

Last and not least, providing informal education to farmers – by teaching them new methods and technologies- is a crucial measure that would help improving food production and so on.

These measures along with other ones in a global strategy would indeed contribute to achieve a national food security.

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