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**THE RELATIONSHIP BETWEEN REPRODUCTIVE HEALTH  
AND FAMILY NUTRITION IN AFRICA<sup>1</sup>**

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*The views expressed are those of the author and do not necessarily reflect those of the United Nations.*

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## Introduction

The last 35 years or so have witnessed a dramatic shift in the demography of many developing countries. In Africa, several countries got their independence and made substantial improvements in life expectancy, but fertility declines have been rare except for a few countries. Many African countries have observed changes in economic, political and social issues. This has brought about increase in education levels, living standards and a general improvement in health and well-being. Data shows that the high levels of child malnutrition in sub-Saharan Africa are to a certain extent a result of low levels of economic development and high fertility in the region. However, much of sub Saharan Africa is still characterized by struggling economies, poor public health services, high inflation and low incomes and under-developed agricultural sectors. The high levels of fertility result in meager resources being spread across many family members and being distributed unevenly among household members (Madise, et al, 1998). On this basis, this paper aims at discussing the interrelationship between reproductive health and nutrition.

The Program of Action of the ICPD in Cairo in 1994 defined reproductive Health as "a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity in all matters relating to reproduction, its functions and processes" (UN, 1995). Reproductive health therefore, encompasses those aspects of health that surrounds sexuality and procreation. To address reproductive health issues, several areas in health, needs to be addressed. These are: reduction in fertility, reduction in maternal mortality and morbidity, reduction in STD including HIV/AIDS, and overall improvement in the quality of women. Reproductive health has been promoted as a way to address a range of women health needs as well as improve the quality of services provided to current family planning users. By reducing ill health and premature deaths, reproductive health care is considered a worthy investment in its own right. While the issues of reproductive health and sexuality involve men and women, women face more health risks. Recent data show that about one-third of the total disease burden (ill health and premature deaths) that women face is linked to pregnancy, childbirth, abortion, HIV and other health disorders. They are more susceptible to STDs and HIV and can transmit these diseases to their unborn children (WHO, 1995, UNFPA, 1995).

Optimal nutritional status is the state where the body gets all the nutrients that provide good health and optimal utilisation. Presence of problems like inadequate food intake, infectious and parasitic diseases, and adverse environmental factors often associated with poverty, cause low nutritional status and therefore, prevents people from realising their full growth potential. Malnutrition is therefore, a state in which the physical functions of an individual is impaired to the point where she/he can no longer maintain an adequate level of performance at such things as physical work, resisting or recovering from effects of disease, maintaining an adequate level of growth, or the process of pregnancy or lactation. Nutritional status is therefore a sensitive indicator of health status and nourishment levels of a population (Toroitich-Ruto, 1998; Madise and Mpoma, 1997; Madise and Matthews, forthcoming).

While nutrition and reproductive health have always been addressed differently in the past, it is imperative that intervention measures take into account the close links between the two issues in order that quality of life in Africa is improved. The need for such a study is to identify issues that can be used for future policy directions in improving general well being in sub-Saharan Africa.

## **Literature review**

According to the United Nations Children's Fund (UNICEF), nearly one third of all sub-Saharan African children under the age of five years are thought to be underweight. This is cause for concern since there is now evidence that the risk of mortality is elevated for children who are mildly to moderately underweight. (Pelletier, 1993).

The causes of undernutrition are multisectoral and interrelated, often operating at many levels. According to Madise and Matthews (forthcoming), undernutrition operates from the individual child to the household community, and possibly up to the global community, whose policy could be creating disparities in the welfare of the world's children. At the individual level, the causes of undernutrition are associated with imbalances such as dietary intake and illness, and these interrelate to form a repeated cycle that can have fatal consequences. At a household level; the intermediate causes of undernutrition include inadequate access to food, poor sanitation, insufficient health

care and inadequate child care (UNICEF, 1998). At a community level, the presence of health services or community workers can help to improve the nutritional status of children through good health care and education. Nationally, food prices, expenditure on health services, and education can also affect the nutritional status of children. This means that one cannot look at nutritional status of a household without looking at reproductive health. This paradigm shift will provide strategies that will be useful in dealing with the problems that have plagued African countries over the years.

Present developing country populations amount to a total of about 4.1 billion out of a global population of 5.3 billion. About 2 billion are women, and these women produce over 50 per cent of food supplies (and 80 per cent in Africa. Regardless of the women's economic contribution, most developing country women receive little access to and control over resources. Furthermore, about 80 per cent live in rural areas. And regardless of the nature of the economic role of women, or where it is present these activities are important social and economic indicators. Therefore, malnutrition and uncontrolled fertility are phenomena of worldwide concern. They are closely inter-related – more babies mean more mouths to feed, with consequent malnutrition when food is scarce; ill fed families have high net reproduction despite high pregnancy wastage (JICA, 1993). Comparison of sex differentials in mortality of countries indicates that when life expectancy at birth is long, females experience lower mortality than males at every age. Santow (1995) also suggested that pregnancy and childbirth are rendered more dangerous by dietary insufficiencies caused by the inequitable distribution of food, by various forms of genital mutilation, and by infection with a sexually transmitted and by infection with a female genital mutilation may predispose infection.

A study conducted in 8 African ethnic groups show that women have a very important role in food production and domestic responsibilities which have been neglected. They provide cheap labor and capital penetration that has affected this position (Lado, 1992). Another study carried out in Kenya and Malawi showed that while income was lowest among de facto female-headed households, preschoolers' nutritional status was significantly higher than on other types of households. These results suggest that food security and preschooler nutritional status are influenced by the interaction of income and gender of head of household and that nutritional status

may be improved by a combination of child feeding practices and other nurturing behavior. (Kennedy and Peters, 1992; Alderman et al, 1997)

It has been suggested that policies that promote girls' schooling are justified on the basis of equity, economic productivity, and social benefits. Child survival is higher in countries that have invested heavily in female education. Educated women also marry later and practice family planning.

In a study carried out among women aged 15-49 years old and all children 12-35 months before the survey, findings showed that moderate to severe malnutrition was higher among children in polygynous mothers. Children of never married and ever married mothers had significantly higher risk of polio immunization drop-out and wasting than children of monogamous mothers. The risk of being fully immunized or being stunted did not vary significantly by marital status. This paper showed the importance of looking at broad social context and relationships within households (Nondo, 1993; Newmann et al, 1995; Gage, 1997).

Another study looking at maternal and child health showed that maternal education was a significant determinant of weight, height and weight gain with secondary schooling having a larger effect than primary schooling (Desai, 1994; Deolalikar, 1996; Rosen and Conly, 1998; UNICEF, 1999). This study confirmed that small deficits in birth weight are not likely to be permanent, with infants making up for birth weight deficits completely within the first year of life through biological catch-up growth.

The type and amount of food that people eat are largely determined by socioeconomic factors, especially the price of food relative to income. Bender and Smith (1997) explain that as people shift from rural to urban areas, the type of food consumed changes. Although urban poverty is a growing problem due to rapid urbanization, upto 80 per cent of extreme poverty is in rural areas. There is lack of access to adequate foods, and children in rural areas have been shown to be underweight for their age compared to urban areas. Malnutrition takes its toll on children, and the health damage begins at birth. Pregnant women who receive inadequate nourishment are likely to have underweight babies, who are especially vulnerable to infections and parasites that can lead to early death (Toroitich-Ruto, 1998; Toroitich-Ruto and Wasao, 1999).

Another important issue that has rarely been addressed is the issue of eating inappropriate food. Studies have shown that an increasing number of people in Africa are suffering from new diseases that were previously not in the continent. Diabetes, hypertension, abdominal ulcers and cardiovascular disease are increasingly common in Africa where people are changing their diets from the original high-fiber meals to low carbohydrate meals. Foods high in fiber such as cereals, starchy vegetables and beans fail to raise serum triglyceride levels in the body. Obesity was previously not seen in Africa where people consumed unprocessed foods. There was a decreased calorie intake relative to energy expenditure in these communities (Shils and Young, 1988; Finn, 1999).

In a study carried out in Kenya on breast-feeding among a nomadic tribe, it was shown that environmental, bio-behavioral and socioeconomic factors associated with variation in breast-feeding frequency. Findings showed that the age (growth) and physical development of infants show significant correlations with breast-feeding frequency. Maternal physical status, the depth of the maternal social network and rainfall were also significant in influencing breast-feeding (Gray, 1995; Baksh, et al, 1994; Barbieri, 1994)). Another study showed that women of low weight before and during pregnancy were more likely to have a low birth weight infant than those of greater weight. Low maternal height predicted delivery complications but less so than socioeconomic status, of previous stillbirths and parity. Larger and better-nourished mothers were able to endure low energy intakes and loss of body fat and protein during pregnancy and lactation than smaller and malnourished mothers (Kigutha et al, 1995).

There is evidence to show that the nutritional status of children of female headed households may be better than that of children of male headed households, suggesting that when women have more control over resources, more goes to the children. It was found that trade-offs in the ways families were coping, which appeared to balance some of the negative effects of each situation (Onyango, Tucker and Eisemon, 1994). In a comparative study of Ghana and Kenya, results showed that interactions between income, and gender of the household head, and gender of the preschooler are more likely to control child nutritional outcomes than any one individual variable (Kennedy and Haddad, 1994). Obunga, Kizito and Bicego (1994) established

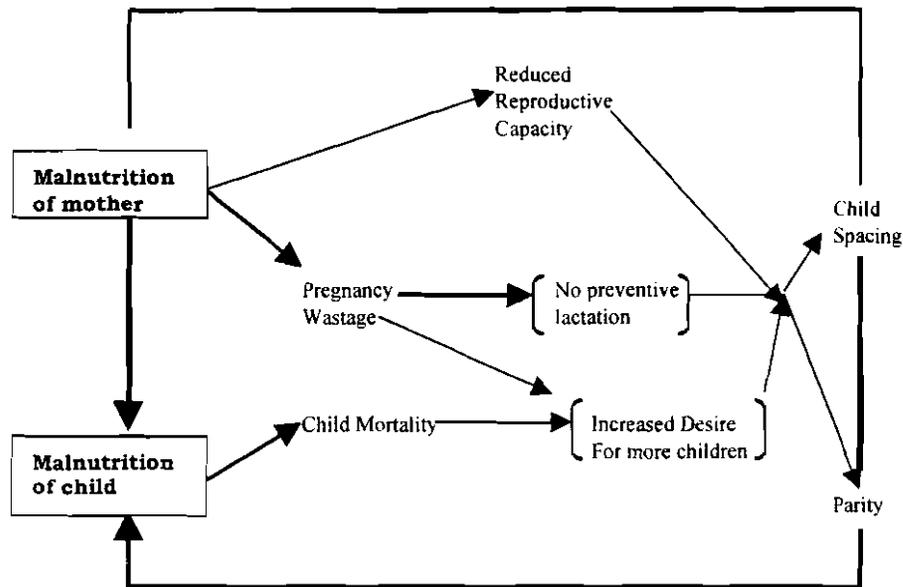
that there was need to overcome socioeconomic underdevelopment in order to reduce child mortality. Child survival will improve with increased education among rural women. Bicego and Boerma (1993) also found that maternal education plays a significant role in effective discussions on preventive and curative care for example, timely recognition of and response to serious symptoms. Other work also show that each additional year of formal education to which women are exposed, the child mortality rate declines by 9 per cent (JICA, 1993).

## **Theoretical Explanations**

Scientists have come up with several views to discuss why fertility is high in most African countries. One such theory that directs this paper is that once infant mortality declines, parents will perceive that fewer families are better to achieve desired family size. In this case, when more children survive, the initial effect is to increase family size and accelerate population growth. This theory postulates that population growth will eventually decrease because of purposeful fertility control. It also suggests that improved health and nutrition will enhance the chances of survival and make women aware of the need to avoid unwanted pregnancies. The explanation at the family level is that infant mortality shortens lactation, vitiates cultural pressures for abstinence, and places women in a continuous state of reproductive effort.

The theoretical framework used in this study is based on four main categories that influence optimal health status. The framework incorporates the dimensions that are briefly outlined below. Demographic factors such as family size, age, and marital status will influence the eating habits of a household and therefore, the nutritional status of the household – in this case, the nutritional status of the mother and child. The pace at which the government takes to implement policies will influence socio-economic factors such as availability of water, roads and health services, which in turn influences the health status of the household.

**Figure 1: The Interrelationship between nutrition and fertility**



*Source:* NAS. 1975

## Data sources and methods

The data used in this study were taken from several Demographic and Health Surveys (DHS) which have been conducted in several countries in sub-Saharan countries. These surveys collect household-based data on population, reproductive health and maternal and child health. These data have been supplemented with data collected from UNICEF, Population Reference Bureau and other sources. The basis of sourcing information from several studies is to provide in-depth insights into the health situation in sub-Saharan Africa.

Data from countries with high fertility rate, declining fertility rates, various trends in health, nutrition and population issues were selected to give a broad picture of the current situation in Africa. While this may not provide the exact situation in all countries, or in a specific country, it is able to provide basis for formulating policy and programmatic issues, which will be beneficial to all African countries.

## Variables and Measures

### Nutritional Status

#### Nutritional Status of the child

In this paper the percent of children within some specified levels of the standard nutritional status indicators for children aged 6-60 months is used. Surveys assess the nutritional status of children of that age range by measuring their heights and weights and then comparing these with the same measures for well-fed children using the international reference population as defined by the United States National Center for Health Statistics (NCHS) and the Center for Disease Control (CDC). The indices used to compare these children to those of the reference population were Height for Age, Weight for Height and Weight for Age. Measures of disparity (Z-Scores or standard deviations from the median of the reference population) between the two comparison groups were calculated to determine the extent of malnutrition among African children.

A child's height or length compared to the median height or length of the reference population for the same age and sex gives the height for age index. Children falling below the cut-off point of minus two standard deviations (-2SD) from the median of the reference population are classified as stunted or short for their ages, and chronically undernourished. Those who are below minus three standard deviations (-3SD) are considered severely stunted. The weight of a child compared with the weight of reference children of the same height (or length) and sex gives the weight for height index. This measure is independent of age and is useful where the exact ages of children are difficult to determine. It measures current nutritional status or wasting.

Children whose Z-Scores are below minus two standard deviations (-2SD) from the median of the reference population are classified as wasted or acutely undernourished while children whose weight-for-height fall below minus three standard deviations (-3SD) are severely wasted. For the purpose of this paper, we will confine our analysis to cases of severe stunting and wasting i.e. we will use as our dependent variables, the percent of children whose height-for-age and weight-for-height indices fall below minus three standard deviations (-3SD) of the reference category.

The weight-for-age index is a composite of the two indices described above and

so does not distinguish between wasting and stunting. Children whose weight-for-age index falls below two standard deviations from the median are classified as underweight, and below three standard deviations are severely underweight. In a healthy well-fed population of children it is expected that for each of the three indices, only 2 to 3 percent of children would fall below minus two standard deviations from the median of the reference population and less than one percent of the children would be below minus three standard deviations.

Height for age, which is a measure of linear growth. A child who is below minus two standard deviation [-2SD] from the median of the NCHS reference population in terms of height-for-age is considered short for his/her age, or stunted, a condition that reflects the cumulative effect of chronic malnutrition. If the child is below minus three standard deviations [-3SD] from the median of the reference population, then the child is considered severely stunted. A child between -2SD and -3SD is considered moderately stunted.

Weight-for-height describes current nutritional status. A child who is below minus two standard deviations [-2SD] from the median of the reference population in terms of weight-for-height is considered too thin for his/her height, or wasted, a condition reflecting acute or recent nutritional deficit. As with stunting, wasting is considered severe if the child is more than minus three standard deviations below the median of the reference population. Severe wasting is closely linked to mortality risk.

Weight-for-age is a composite index of weight-for-height and height-for age and, thus, does not distinguish between acute malnutrition [wasting] and chronic malnutrition [stunting]. A child can be underweight for his age because he is stunted, because he is wasted, or because he is wasted and stunted. Weight-for-age is a good over all indicator of a population's nutritional status.

### **Nutritional Status of the mother**

Height is one of the Anthropometric indicators of maternal nutrition. It is associated with past socio-economic status and nutrition during childhood and adolescence. In DHS studies its used to predict the risk of difficult delivery, since small stature is often associated with small pelvis size. Short stature is also associated with increased risk of low birth weight. In DHS studies quoted in this paper, the cut off point

below which a woman is identified as "at risk" is in range of 140-150 cms. Again DHS studies use BMI [body mass index] as an index of assessing thinness and obesity among women. Its defined as weight in kgs divided by squared height in metres. A cutoff point of 18.5 has been recommended for defining energy deficiency among non-pregnant women.

## **Fertility variables**

### ***Family Size***

Family size-defined as the average number of people in a household. This has implications to nutrition and health because it determines levels of household consumption, especially for children, and expenditure on food and health items.

### ***Household headship***

It has been established in the literature that households headed by women in developing countries tend to be characterized by food insecurity and higher rates of malnutrition in children. This arises from the fact that gender discrimination in the distribution of household resources is often against women who are usually overburdened by multiple responsibilities and other difficulties associated with taking care of their families. Such situations make it difficult for women to adequately meet their own needs as well as the needs of their children including food intake and healthcare.

### ***Use of family planning and parity***

Contraceptive use may indirectly lead to better nutritional status and better health for children because use of contraception is directly associated with longer child spacing and fewer children. Spacing allows the child to have better health because it increases the duration of nutritional care that a child gets from the mother.

## **Economic**

### ***Income***

Household income determines the level of expenditure on goods and services and the welfare of households in general. Generally, incomes are associated with better food security because of the ability to buy more and different foodstuff that comes with having income. We therefore hypothesize that non-agricultural income will have a positive association with stunting in children.

### ***Literacy***

Literacy influences children's nutritional status in two important ways: First, it enables mothers or other care givers to provide more informed nutritional care to children because of enhanced ability to read or write. Literacy also increases the labor market opportunities and income-earning ability of mothers, which in turn enables them to financially meet the food and health needs of their children. We hypothesize that higher levels of literacy will be associated with lower levels of malnutrition in children.

### ***Breast feeding***

It is generally accepted that breastfeeding has health-enhancing effects on children because breast milk is nutritious and by itself can meet the nutritional requirement of infant's for up to the first half year of the infant's life, breastmilk provides immunity for some infections and is clean and can prevent the growth of bacteria.

## Findings

**Table 1: Population projections for Major world regions, 1995-2020**

	Population (millions)			Average annual growth (%)	
	1995	2020	2050	1995-2020	2020-2050
<b>World</b>	5,687	7,672	9,366	1.2	0.7
<b>Developed</b>	1,171	1,219	1,162	0.2	-0.2
<b>Developing</b>	4,516	6,453	8,205	1.4	0.8
<b>Less Developed</b>	579	1,051	1,632	2.4	1.5
<b>Africa</b>	719	1,317	2,046	2.4	1.5
<b>sub-Saharan</b>	588	1,119	1,789	2.6	1.6

Source: Bender W and Smith M (1997)

Table 1 shows the United Nations population projections at a global level. Population projections are usually developed on assumptions made from childbearing decisions, health and socioeconomic conditions. The range of the projections shows a striking variation among the regions. It shows that the world's highest growth is occurring in Africa where annual growth is 2.5 per cent. This is so because it is fueled by high fertility. While the continent is suffering from poor socioeconomic growth, famine and war, and basic infrastructure, we see we see its population expanding from 13 per cent to 22 per cent between 1995 and 2050.

**Table 2: Daily per capita calorie supply and malnourishment in selected developing regions, 1990-1992**

	Daily calorie supply (kcal/person)	Total popn. (millions)	Malnourished popn (millions)	Malnourished popn (%)	Underweight Children (millions)	Underweight Children (%)
<b>Developing countries</b>	2,500	4,200	840	20	179	34
<b>Sub-Saharan Africa</b>	2,100	500	220	43	26	30
<b>Near East/North Africa</b>	3,000	310	40	12	13	25
<b>East &amp; Southern Asia</b>	2,500	1,680	270	16	43	24
<b>South Asia</b>	2,500	1,160	260	22	91	58
<b>Latin America/Caribbea</b>	2,700	430	60	15	7	12

Source: Bender W and Smith M (1997)

Table 2 shows that within the developing world, an estimated 840 million people, including 200 million children, do not receive enough calories to ensure physical health and development. Some 43 per cent of the population in sub-Sahara are malnourished compared to 22 per cent of the population in South Asia and only 12 per cent in North Africa.

Trends show that the number of people who are food-energy deficient has drastically reduced in other parts of the world but in Africa, both the absolute number and percentage of people suffering from severe malnutrition has increased primarily because of population growth.

**Table 3: The proportion of selected health indicators in several African countries, 1998**

	IMR rate	TFR	U5MR	Estimated # of births, 1999 (in '000s)	% of births attended by trained health personnel	% of married currently women using modern FP	Adults (15-49) with HIV/AIDS (per 10,000)
Egypt	52	3.3	65	1,740	56	56	3
Ethiopia	56	7	185	2,715	n/a	3	931
Kenya	74	4.7	112	1,004	45	31	1,164
Malawi	134	5.9	234	416	55	14	1,492
Senegal	68	5.7	139	378	47	8	177
Nigeria	73	6.2	106	4,849	31	7	412
Ghana	56	5.4	107	764	41	13	238
Zimbabwe	53	4	77	357	69	42	2,584

Source: PRB, 1999

Table 3 above shows that generally IMR is going down in most of the selected African countries except Malawi where it is still over 100 and under U5MR is showing the same trend as IMR TFR is still very high in Ethiopia, Uganda, Malawi and Nigeria. The estimated number of births in 1999 is highest in Nigeria followed by Ethiopia.

The percentage of birth attended by trained health personnel is highest in Zimbabwe which has the lowest IMR and U5MR as well as number of births. Zimbabwe also has the highest percentage of women using a modern family planning method followed by Kenya.

The HIV trend shows that Zimbabwe has the highest percentage of adults with HIV/AIDS followed by Malawi and Kenya. Table 4 below gives indicators of maternal health and nutritional status.

**Table 4: Indicators of maternal health and nutritional status, 1993-1998**

Country	TFR	Maternal deaths/ 100,000 births	Low birth weight births as% of all births	Pregnant women with anemia (%)
Uganda	7.4	680	16	47
Ethiopia	6.9	900	16	47
Kenya	5.4	500	16	57
Malawi				
Senegal	6	933	11	55
Nigeria	6.5	800	16	43
Ghana	6	1000	14	64
Zimbabwe	5	77	14	47

Source: PRB, 1999

Table 4 show that all countries have generally high maternal deaths with Ghana, Ethiopia and Senegal showing over 900 deaths/100,000 births. Zimbabwe has low a figure of 77. It also has the lowest TFR. All the countries have generally similar data on low birth weight babies which is still quite high. The percentage of pregnant women with anemia is generally high in all countries.

**Table 5: Proportion of children who are breastfed**

	Ever breastfed within 1 hr of birth	Breastfed within ages<6 months	Exclusively breastfed at ages<6 months	Breastfed with complimentary foods (6-9 mths)	Median duration of breastfeeding
Egypt					
Ethiopia	n/a	n/a	74	n/a	n/a
Kenya	98	58	12	94	21
Malawi	97	59	2	87	21
Senegal	97	16	13	69	21
Nigeria	97	33	1	70	20
Ghana	99	16	31	79	n/a
Zimbabwe	99	40	11	96	19

Source: PRB, 1999

Table 5 shows the proportion of children who are breast-fed. All countries show a very high proportion of all children who are breast-fed. Only 16 per cent of children in Ghana and Senegal are breast-fed within 1 hour of birth compared to 59 per cent in Malawi. By 6 months, over 50 per cent of children in Ethiopia and Uganda are exclusively breast-fed and only 1 per cent and 2 per cent are exclusively breast-fed in Nigeria and Malawi.

All countries have added some complementary food in the diet of children who are 6-9 months old. In all countries, the median duration of breast-feeding ranges from

19-21 months.

Table 6 below shows mean height and % of women shorter than 145, BMI and % of women whose BMI is less than 18.5

**Table 6: Nutritional status of mothers in selected African Countries**

Country	Height		BMI		No. of women
	Mean	% < 145 cm	Mean	% < 18.5	
Zimbabwe	159	< 1	23.1	5	1799
Kenya	160	1	21.9	12	3006
Ghana	158.5	1	22.2	10.8	1963
Eritrea	155.9	1.5	20.5	31.6	1779
Egypt	156.5	1.4	27.1	1.5	N/a
Zambia	158.2	1.1	22.0	8.9	N/a

*Source:* Federal Office of Statistics, Nigeria, 1990; Ghana Statistical Surveys, 1993; Central Statistics office, Zimbabwe, 1994; Central Statistics office, Zambia, 1996; NCPD, Kenya, 1989; 1993; 1998; National Population Council, Egypt, 1992; National Statistics Office, Eritrea, 1995;

Table 6 shows that generally, in all the countries studied, mothers' height ranged from less than 1 per cent in Zimbabwe from the reference height and as high as 1.5 per cent lower than the reference height. BMI, which shows the nutritional status, varies. Egypt had only 1.5 per cent who had BMI lower than the recommended BMI, followed by Zimbabwe (5 per cent). Eritrea had 32 per cent women who are below the recommended BMI.

Table 7 below shows the percentage of children under five years who are classified as Malnourished according to three anthropometric indices of nutritional status: Height-for-age weight-for-height, weight-for-age for selected African countries.

Over 35 per cent of children in Nigeria, Zambia, Kenya and Eritrea, have HA below -2 SD compared to Zimbabwe with only 22 per cent being in the same category. Eritrea and Ghana have over 10 per cent of its children being -2 SD from the reference category. When using WA, Table 7 shows that Eritrea is worst of with 36 per cent of its children being -2 SD followed by Nigeria (36 per cent). Egypt is the only country where WA is below 10 per cent.

**Table 7: Nutritional Status of Children in selected African Countries**

Country	Height-for-age (HA)		Weight-for-height (WH)		Weight-for-age (WA)		No. of children
	% below -3SD	% below -2SD	% below -3SD	% below -2SD	% below -3SD	% below -2SD	
<b>Kenya</b>							
Male	13.2	35.2	1.5	5.9	4.6	22.2	2246
Female	12.1	30.8	1.4	6.2	5.0	20.0	2167
<b>Zimbabwe</b>							
Male	6.9	21.7	1.1	6.5	3.4	17.3	991
Female	5.3	21.1	0.4	4.5	2.6	13.8	1,023
<b>Ghana</b>							
Male	9.2	28.0	2.7	12.1	8.6	28.8	919
Female	8.9	24.0	1.8	10.8	7.4	25.9	900
<b>Nigeria</b>							
Male	23.4	43.4	1.7	9.8	12.0	35.8	2735
Female	21.0	42.7	1.8	8.3	11.9	35.7	2830
<b>Eritrea</b>							
Male	16.6	34.6	3.5	16.2	16.0	42.3	1162
Female	20.0	40.5	2.8	16.7	18.0	45.2	1107
<b>Egypt</b>							
Male	9.1	24.4	0.9	3.2	1.6	9.1	3761
Female	9.1	24.4	0.6	3.3	1.7	9.3	3519
<b>Zambia</b>							
Male	18.1	43.1	1.0	5.0	6.1	24.5	2665
Female	17.0	41.7	0.3	3.3	4.6	22.5	2778

Source: Federal Office of Statistics, Nigeria, 1990; Ghana Statistical Surveys, 1993; Central Statistics office, Zimbabwe, 1994; Central Statistics office, Zambia, 1996; NCPD, Kenya, 1989; 1993; 1998; National Population Council, Egypt, 1992; National Statistics Office, Eritrea, 1995

## Discussion

Results show that countries with low CPR and TFR tend to have low IMR and U5MR. Also, countries with high GNP have low IMR, U5MR and MMR. Data from nutritional status of children and mothers in Kenya show that education level, number of children, birth interval; influences the nutritional status of children and mothers. The age of the mother is also significant in influencing the nutritional status of the mother. Therefore RH has to be closely linked to nutrition if the health status of African households are to improve. Because the relationships between nutrition and fertility are interactive and cyclic, it is difficult to measure their separate influences and effects.

Statistics have shown that all countries in Africa have children and their mothers still plagued by high malnutrition, with the exception of Egypt and Zimbabwe where there is some improvements. This shows that there is need in every country for emphasis to improve the feeding habits and therefore nutritional status of households. The findings also show that countries that are doing very badly in terms of socioeconomic conditions and economic instability due to war, are also the countries showing high levels of malnutrition.

Consideration of fertility and nutrition can be viewed in terms of the following:

- a) Number of pregnancies and births experienced: In most African countries except where the fertility decline has taken place (Kenya, Zimbabwe, Botswana, Nigeria and Ghana), fertility is high, contraceptive use is still low and inaccessible and birth intervals are short. To an unhealthy woman who may be malnourished and living in poverty, this is detrimental to her health. Furthermore, in several ethnic groups in Africa, breastfeeding is stopped immediately a woman finds out that she is pregnant, as breast milk is termed poisonous to the baby. To prevent shortening of this breastfeeding period, which is good for the growing child and healthy for the mother to regain her health status, it is essential to prolong breastfeeding as long as possible and elongate birth intervals. While this is essential for the nutritional status of the mother and child, it will also ensure that she gets the number of children she can provide needs such as education, shelter, food, medical care, and clothing. These also confirms what other studies have shown that children in larger families especially those in higher birth order or in families with more children preschool age suffer from more malnutrition, grow more slowly and are more

anaemic (Toroitich-Ruto, 1998; Alderman et al, 1997; Pollitt, 1990; NAC, 1975).

- b) Age at each pregnancy and birth: The data shown in these paper shows very high mortality and morbidity statistics among women and children. Possible causes for this is due to childbirth among very young girls whose bodies are not physically ready to endure the processes of childbirth. The problem is compounded by the fact that most African countries have poor obstetric care. Furthermore, these mothers do not reach health facilities or when they do, it is too late. Effective ways must be devised to delay age at first birth and first marriage. These two factors will almost certainly determine the number of children she will get at her lifetime. While early age at first birth has health implications, it also has economic implications. Studies have shown that most African countries do not accept girls back to school after they give birth. Such a girl who drops out of school will continue with the cycle of poverty (Alderman et al, 1997; Toroitich-Ruto, 1998).
- c) In Africa where high mortality is still very high, there is the belief that parents will continue having more children until they are assured that their children will not die. This hypothesis postulates that when more children survive, the initial effect is to increase family size and accelerate population growth (APPRC, 1998). But population growth will eventually decrease because parents will see that their children are surviving and they will stop childbearing early. If this is the case, population growth will only decline if improved health and nutrition are put in place. In most African communities where children are still seen as economic assets, such a hypothesis has to be considered so that proper policies are put in place.
- d) Duration of breastfeeding of each infant and the frequency of lactation periods: While many African countries still practice long breastfeeding periods, others have replaced breastfeeding with bottle-feeding. While bottle-feeding is extremely expensive in a continent where resources are scarce, it also reduces the effect that lactation has in delaying the return of ovulation. Also, the long-standing cultural practice of post-partum sexual abstinence is being weakened by widespread concomitants of urbanization and industrialization. To prevent shortening of the

anovulatory period, it is essential to ensure survival of the infant by protecting its health and nutrition by encouraging breastfeeding (NAS, 1975; Population Council, 1998).

## **Programmatic Implications**

Nutritional status influences people during the most vulnerable periods of their lives. Some of the most important periods when care should be taken are:

- The infant during weaning

During this period the mother introduces solids into the usually milk-only diet. Studies have shown that this is a very critical period of a child's life. After about six months, for optimal growth and development, a child needs to be fed frequently with energy-rich, nutrient dense foods. The failure to make such investments at the right time can never be remedied later (UNICEF, 1998; Pollitt, 1990; Tontisirin and Yamborisut, 1995).

- The lactating mother

Breast-feeding perfectly combines the three fundamentals of sound nutrition – food, health and care. Breast milk contains all nutrients, antibodies, hormones and antioxidants an infant needs to thrive, it plays a pivotal role in promoting the mental; and physical development of children. Breast-fed children not only shows better immune responses to immunizations, but their intake of breast milk also protects the mucous membranes that line their gastrointestinal and respiratory tracts, thus shielding them against diarrhea and upper respiratory tract infections (UNICEF, 1998).

- The pregnant woman

Growth during the fetal stage depends on how well nourished a woman was before pregnancy, as well as how much weight she gains while she is pregnant. Gains in weight are essential for the development of new

maternal and fetal tissues, and for maternal and fetal tissues, and for maternal body maintenance and energy. Since the fetus relies entirely on the mother for nutrients, pregnant women not only need to gain weight but also must maintain an optimal intake of essential nutrients such as iron and iodine. Low birth weight babies are at greater risk of dying than infants of average weight. If they survive, they will have more episodes of illness, their cognitive development may be impaired, and they are also more likely to be malnourished (Pollitt, 1990; WHO, 1997; UNICEF, 1998).

- The pre-adolescent and post adolescent female

During adolescence, girls' bodies are growing and there is a lot of hormonal imbalance due to physical growth. During this period, adolescents need adequate energy and nutrient intake. This is the period when the pelvic bones are being developed in readiness for reproduction. Poor nutrition will lead to poor pelvic growth and this will lead to obstetric problems (Toroitich-Ruto, 1995). Also, during menstruation, girls start losing blood and they need enough iron to help in generating more blood cells.

1. School health programs should be geared towards improving the nutritional status of children who otherwise would not be getting all their nutrients from the food they eat at home. During the period of 2-9 years, children are often treated as adults and there is a likelihood of the diet being poor and inadequate for optimal growth (Baker, Martin and Piwoz, 1996; Alderman, et al, 1997; UNICEF, 1998; Toroitich-Ruto, 1998)
2. HIV/AIDS and nutrition: There has been considerable research on whether mothers who are HIV/AIDS should breastfeed. It has been shown that a child stands greater risk of vertical (Mother to child) transmission during the time of late pregnancy and childbirth. In a 1998 WHO, UNICEF and UNAIDS technical consultative meeting on

HIV and infant feeding, guidelines were issued to call for strengthening of initiatives to protect, promote and support breastfeeding among mothers who are HIV negative or unknown HIV status. These guidelines describe several infant-feeding options for consideration by HIV positive mothers. However, recent studies suggests that babies who are breastfed exclusively may be less likely to transmit infection than mixed feeding, possibly because other foods can damage the infants gut and make it easier for the virus to cross the intestinal mucosa. It was concluded that it was necessary to provide the necessary support to enable mothers to make and carry out their choice, whether to breastfeed or to use replacement feeds. (Coutsoudis, et al, 1999; WHO, UNICEF, UNAIDS, 1998).

## **Policy Implications**

Integrating nutrition and family planning. This can be done by delaying birth to ensure optimal growth (physical psychological and emotional) to raise education level and therefore improve socioeconomic status of mother and children.

Giving more attention to special groups in society such as adolescents, refugees and the disabled. In Africa, the disabled are more likely to be higher in proportion compared to other areas of the world due to conflicts, poor health facilities and complications during childbirth or even careless and misdiagnosis during hospital care. In other parts of the world, facilities are available for all sectors of society. However, the disabled are more likely to be neglected. The most important issues that the disabled need are health care, proper food and protection from dangers such as rape. The disabled need to be given contraceptives and proper IEC with the latest contraceptive technology. Recent work carried out by Population Council showed that the refugees have the combined pill as the only contraceptive method (Muia, 1999).

Government to improve socioeconomic conditions. If living standards are improved, there will be better health care and reduction in infant and child mortality as well as low incidence of maternal mortality.

Do more research on ways to improve the nutritional status of households in Africa using indigenous inexpensive foods that are locally available.

Promote use of family planning to increase birth spacing to provide enough food and health of mother – this will reduce low birth weight infants, maternal deaths due to weakness and increase the number of healthy babies being born.

There is need for the governments to improve economic conditions of people in order that living standards improve. If this is done, then the health status will automatically improve.

There is still need for research and education about nutrition and the important components of healthy eating to avoid the increase of illness caused by poor eating habits. If people avoid low fat diets and African indigenous foods, they will enhance their own health and lower their chances of dying early.

## **Conclusion**

It seems therefore that any programs in Kenya that tries to improve the health status of its children (and in turn, its people). Have to work on issues/policies that will reduce mortality levels. For people to have good health they need to have their basic needs met. In addition to this employment opportunities have to be available and education is necessary (Development Plan, 1979-1983). Kenya's IMR and CMR improved during the early years because the country experienced a general improvement in the economic conditions and general well-being of most individuals. Currently, the situation has declined and therefore the reason for the declining IMR and CMR.

Population growth is the single largest determinant of future nutritional needs. As long as the population of most African countries continue to rise or remain constant, many people will still lack adequate food and health status. Therefore, more policies that promote smaller families will keep the population and food equation in balance.

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