

Nutritional Assessment of the West Bank and Gaza Strip, 2003



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**Drs. Abdeen and Greenough wish to dedicate this report to the memory
of ...**

**Johns Hopkins University
Professor Matthew Tayback, ScD**

whose guidance and mentorship to us and other public health scientists throughout the Middle East will be greatly missed. His greatest pleasure in these last years of a distinguished career was designing the 2002 Nutritional Assessment of the West Bank and Gaza Strip and advising the Emergency Medical Assistance Project (EMAP). He did so with a strong belief and vision that whatever could be done now to strengthen the public health infrastructure of the West Bank and Gaza Strip would eventually be part of the public health foundation for the future Palestinian state, a state whose citizens could live in peace and secure health.

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Executive Summary

A. Introduction

In 2002, the Palestinian Ministry of Health (MoH), concerned about the lack of access of the Palestinian population to food and the disruption of its markets, requested a nutritional assessment for the West Bank and Gaza Strip. A national anthropometric assessment of children ages 6-59 months was undertaken by academic partners Al Quds University and Johns Hopkins Bloomberg School of Public Health under a US Agency for International Development (USAID) sub-grant through CARE International's Emergency Medical Assistance Project (EMAP1). That nutritional assessment revealed distinct nutritional vulnerabilities:

- An alarming prevalence of global acute malnutrition in the Gaza Strip (13.3%);
- A global chronic malnutrition prevalence of 17.7% in the Gaza Strip and 7.9% in the West Bank; and
- Large percentages of the preschool population had decreased energy, iron, vitamin A, and zinc intakes.

The findings triggered an aggressive food assistance response from the humanitarian community beginning the summer of 2002. Nonetheless, by the summer of 2003, stakeholders remained concerned that in the face of continuing conflict, further economic deterioration, and the emergence of a physical barrier that could potentially prohibit the production and distribution of food, the level of humanitarian food assistance might not be adequate and led to deeper queries of the ability of Palestinian households' ability to access food and avoid nutritional disasters.

Malnutrition and poor intake of essential macro (energy and protein) and micronutrients (vitamins and minerals) are directly affected by food insecurity—the condition where all people in a population have, at all times, the physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. To further investigate the food and nutrition vulnerabilities in the Palestinian population, a dual comprehensive assessment was designed. The first, a qualitative assessment by the UN Food and Agriculture Organization (FAO) that examined food security factors, was completed in early summer 2003. The other is this assessment—a quantitative assessment of both food security and nutritional indicators—conducted by partners Al Quds University, Johns Hopkins Bloomberg School of Public Health, and the American Near East Refugee Aid (ANERA) again under the EMAP grant and completed in August, 2003. **For stakeholders to visualize the current state of food security and nutrition in the Palestinian Territories three years into the *intifada*, these two assessments should be analyzed together.**

B. Objectives

The *Nutritional Assessment of the West Bank and Gaza Strip, 2003* will measure and discuss:

- The prevalence of acute and chronic malnutrition in the Palestinian population of preschool aged children one year after intensive food aid;
- Sub-populations of preschool aged children that may be vulnerable to acute and chronic malnutrition;
- The quality of food consumption for preschool age children in terms of macro and micronutrients with a comparison of similar 2002 data;
- Critical food security indicators that can be quantified and the extent to which they affect food consumption;
- The current level of food assistance and the degree to which that assistance is targeted appropriately; and
- The links between nutrition and quantified food security indicators.

C. Methods

The Palestinian Central Bureau of Statistics (PCBS) sampling frame based on the official 1997 census was updated in March 2003. A sample of 2,486 households was randomly selected using a two-stage sample design and stratified by urban, non-urban, and refugee camp, and weighted by population between the West Bank and Gaza Strip. In the first stage primary sampling units (clusters) of households were selected in each stratum; in the second stage, households were selected within each cluster. The households yielded 3,086 preschool age children.

The assessment's nutrition parameters included:

- **Acute malnutrition** or wasting, the ratio of a child's weight to height (or in the case of an infant, weight for length) which reflects inadequate nutrition in the short-term period immediately preceding the survey;
- **Chronic malnutrition** or stunting, the ratio of a child's height for age and an indicator of past growth failure, implying a state of longer term (weeks to months to years) faulty nutritional intake; and
- **Nutrient deficiencies** of critical macronutrients (energy and protein) and micronutrients (iron, vitamins A and E, zinc, and folic acid) by a 24 hour dietary recall on the youngest child greater than 12 months old in the household. The 3,086 households yielded 2,027 children ages 13-59 months. (The 24 hour dietary recall was developed by Al Quds University and adapted for the Palestinian diet).

In addition, we queried household respondents on indicators of food security which could be quantified and cross-tabulated with the prevalence of acute and chronic malnutrition.

D. Summary of Findings

The severity of acute and chronic malnutrition is expressed as a Z-score—that difference between the weight for height ratio (acute) or height for age ratio (chronic) for an individual child and the median value of the population of children divided by the standard deviation of the population. The Z score is the conventional statistic measured for acute and chronic malnutrition. The measure of greatest interest (and the one most commonly referred to by donor and humanitarian agencies) is that segment of the population below -2 Z score, classified as moderate (between -2 and -3 Z) and severe (below -3 Z) combined. This combination of moderate and severe is applied to both wasting and stunting and is termed **global acute malnutrition (GAM) and global chronic malnutrition (GCM)**, respectively. Table S1 below reflects the distribution of GAM and GCM in the population of Palestinian children ages 6-59 months.

<i>Table S1: Prevalence of global acute and chronic malnutrition, children ages 6-59 months, by territory</i>			
Indicator	West Bank n=1767	Gaza Strip n=1322	WB/GS n=3089
Global Acute Malnutrition (%)	3.1	3.9	3.4
Global Chronic Malnutrition (%)	9.2	12.7	10.7

The findings indicate that:

- The prevalence of GAM is at an acceptable level in August 2003 in both the West Bank and Gaza Strip; however, Bethlehem, Qalqilya, Deir al Balah, and Khan Younis had the highest prevalence;
- Compared with data from the previous year, the prevalence of GCM has improved in the Gaza Strip (from 17.5% to 12.7%) but trended upward in the West Bank (from 7.9% to 9.2%), a difference not statistically significant;
- Children registered as refugees were statistically more likely to be chronically malnourished (12.4% versus 9.4% and worse in Gaza Strip refugee children compared to West Bank refugee children (13.2% versus 10.6%); refugee children showed trends in being more likely to be acutely malnourished, however, this was not statistically significant;
- Refugee children were less likely to be acutely malnourished in 2003 (prevalence of 3.9%) compared to 2002 (9.6%)
- Refugee children showed an improvement in GCM—from a prevalence of 15.1% in 2002 to 12.4% in 2003;
- Children in the age group 6-23 months were statistically more likely to have GAM than those 24-59 months of age; and
- Male children had a trend towards GAM and GCM compared to female children, although this was not statistically significant.

Despite the apparent improvement, the quality of food intake for preschool age children compared with 2002 suffered a significant decline. For all macro and micronutrients studied, the daily median intake declined for all preschool age children (Table S2).

<i>Table S2: Percentage change of median daily macro and micronutrient intake, children ages 13-59 months, 2002 to 2003</i>		
Nutrient	1-3 year olds %	4-5 year olds %
Energy	- 8.3	- 13.2
Protein	- 10.8	- 16.7
Vitamin A	- 23.6	- 19.9
Vitamin E	- 10.5	- 23.0
Folate	- 11.3	- 18.9
Iron	0.0	- 15.0
Zinc	- 11.6	- 18.4

Declines in daily macro and micronutrient intake were generally worse in the Gaza Strip. In fact, large percentages of the population of preschool age children from both the West Bank and Gaza Strip are eating below the level of what would be considered deficiencies for vitamins A and E, folate, iron, and zinc as defined by the Recommended Dietary Allowance:

- In the West Bank, 55.5% of 1-3 year olds and 85.8% of 4-5 year olds are deficient in **daily energy (calorie) intake**; in the Gaza Strip, 61.7% of 1-3 year olds and 92.5% of 4-5 year olds are energy intake deficient;
- In the West Bank, 64.1% of 1-3 year olds and 75.1% of 4-5 year olds are deficient in **daily Vitamin A intake**; in the Gaza Strip, 79.5% of 1-3 year olds and 88.1% of 4-5 year olds are Vitamin A intake deficient;
- In the West Bank, 50.7% of 1-3 year olds and 51.3% of 4-5 year olds are deficient in **daily Vitamin E intake**; in the Gaza Strip, 41.5% of 1-3 year olds and 49.3% of 4-5 year olds are Vitamin E intake deficient;
- In the West Bank, 56.6% of 1-3 year olds and 76.3% of 4-5 year olds are deficient in **daily folate intake**; in the Gaza Strip, 53.9% of 1-3 year olds and 77.6% of 4-5 year olds are folate intake deficient;
- In the West Bank, 81.3% of 1-3 year olds and 84.4% of 4-5 year olds are deficient in **daily iron intake**; in the Gaza Strip, 88.7% of 1-3 year olds and 87.3% of 4-5 year olds are iron intake deficient;
- In the West Bank, 95.0% of 1-3 year olds and 95.2% of 4-5 year olds are deficient in **daily zinc intake**; in the Gaza Strip, 94.4% of 1-3 year olds and 93.3% of 4-5 year olds are zinc intake deficient;
- Children in Gaza are more likely to be protein deficient: 8.0% of 1-3 year olds (compared to 4.5% of West Bank 1-3 year olds) and 18.7% of 4-5 year olds (compared to 12.7% of West Bank 4-5 year olds) are deficient in **daily protein intake**.

In general, quality of food intake is worse in Gaza than the West Bank. Some 45.1% of Gaza households are under or unemployed (total working hours less than 20 hours per week or no members employed) compared to 34.0% of West Bank households. Not surprisingly, acutely and chronically malnourished children are more likely to come from households with a poor level of employment than those with part-time or full employment (GAM of 4.1% versus 2.3%; GCM of 18.3 versus 12.1%). West Bankers who depend on fuel during the winter months are similarly stressed: 33.0% decreased fuel consumption during the winter of 2003 compared to 2002 despite the fact that both were similar in mean temperature. In addition, the amount of monthly Palestinian household income decreased 53.9% in the six months prior to the survey, an indication that food insecurity will likely increase with further deterioration in the Palestinian economy.

Palestinian households altered their behaviors and exhibited coping strategies in order to have economic access to food. *In order to buy food* over the past six months:

- 57.2% decreased their Eid giving;
- 62.5% (West Bank 63.6%; Gaza Strip 60.7%) did not pay or paid less on their utility bills;
- 57.9% (West Bank 58.7%, Gaza Strip 56.6%) did not buy or bought less clothes for their children;
- 33.0% paid less or did not pay rent; and
- 26.9% (West Bank 29.8%, Gaza Strip 20.3%) forsook buying medications for household members with chronic diseases; and
- 27.0% sold non-productive assets.

Neither sending out children under 15 to work in order to boost household income nor modifying their ability to attend school by means of tuition costs were common practice.

Palestinian households utilized a number of coping strategies in order to access food. Households were deemed food insecure if these strategies were performed one or more times per week. The most commonly used at least one or more times per week included:

- Purchasing food on credit: West Bank, 20.4%; Gaza Strip, 50.5%;
- Decreasing the amount of food for household consumption: West Bank, 20.0%; Gaza Strip, 32.5%;
- Relying on less preferred and less expensive food items (e.g. frozen instead of fresh and usually of less nutritional value): West Bank, 15.1%; Gaza Strip, 41.0%;
- Restrict consumption of adults preferentially for children: West Bank, 8.0%; Gaza Strip, 11.7%; and
- Reduce the number of household meals eaten in a day: West Bank, 7.6%, Gaza Strip, 11.9%.

Again, as would be expected, Gaza Strip households had a greater tendency to rely on coping strategies than West Bank households. Households frequently (at least once per

week) using the coping strategy of decreasing the amount of household food had a greater likelihood of having children with GCM.

Food assistance was not well targeted. Currently, 46.8% of all Palestinian households—32.2% in the West Bank and 71.8% in the Gaza Strip—receive food assistance from the humanitarian community, mostly from the UN Relief and Works Agency (UNRWA), the World Food Programme (WFP) through NGOs, International Committee of the Red Cross and Red Crescent (ICRC), unions, or Zakat committees. One-third of the entire Palestinian population relies on food assistance for at least one fourth of its food budget. However in Gaza, food assistance constitutes a larger percentage of a given household food budget compared to the West Bank. Keeping in mind that all food assistance comes in the same size food basket regardless of family size, this assessment helped determine those who would be currently at risk as defined by both household employment and frequency to which households utilize coping strategies:

- Households with employment of less than 20 hours per week and currently without food assistance: West Bank, 52.8%; Gaza Strip, 26.6%;
- Households with decreased food consumption one or more times per week and currently without food assistance: West Bank, 69.7%, Gaza Strip, 19.8%;
- Households purchasing food on credit one or more times per week and currently without food assistance: West Bank, 67.5%; Gaza Strip, 23.1%; and
- Eating less preferred/less expensive foods one or more times per week and currently without food assistance: West Bank, 67.5%; Gaza Strip, 19.5%.

Thus, there appears to be a significant population in the West Bank who are food insecure but lacking food assistance. For those households who were *not* receiving food assistance at the time of the survey:

- 26.5% in the West Bank and 42.6% in the Gaza Strip had employment of less than 20 hours per week;
- 20.6% in the West Bank and 22.9% in the Gaza Strip had decreased food consumption one or more times per week;
- 20.3% in the West Bank and 41.5% in the Gaza Strip purchased food on credit one or more times per week; and
- 15.2% in the West Bank and 34.5% in the Gaza Strip ate less preferred/less expensive foods one or more times per week.

Thus, a significant proportion of the Gaza households and at least a fifth of the West Bank households not receiving food assistance could still be considered food insecure over the six month period prior to the survey. The prevalence of households having children with GCM and not receiving food assistance was 13.1%; the prevalence of households having children with GAM and not receiving food assistance was 2.7%, neither of these was statistically significant.

E. Conclusions

One year after humanitarian food assistance addressed the issues of food insecurity particularly in the Gaza Strip, the prevalence of GAM was not nearly as great in 2003. We further believe that efforts to provide food and/or financial access to food in the Gaza Strip prevented those children who were acutely malnourished in 2002 from becoming chronically malnourished in 2003, critically important since chronic malnutrition leads to serious irreversible growth and developmental delays. Among preschool children with refugee status, there was improvement in the prevalence of GCM as well, reflecting the benefit of timely assistance to the acutely malnourished refugee children in 2002. There was a trend, however, to increasing GCM in the West Bank that needs to be followed.

Despite the improvement in the anthropometric indicators, the quality of food intake remarkably declined for all key macro and micronutrients studied. The food baskets are not micronutrient rich; other strategies which increase essential vitamins and minerals in the diet will need to be considered and implemented. Perhaps the most ominous indicator of food insecurity is the decline in absolute daily caloric intake in children as they age.

A high percentage of the population depends on food aid, however, food assistance was not targeted well to households who were deemed food insecure by virtue of the frequency with which food strategies were being utilized or by virtue of level of employment. Household purchasing power remains limited, especially in the Gaza Strip where a greater percentage of households had limited employment and where coping strategies were more frequently utilized for food access. Food acquisition often takes precedence over clothing for children, medications for chronic diseases, bill payments, and gift giving.

In general, despite the intensive efforts by the humanitarian community, household food security and its effects on nutrition in preschool age children remain tenuous in the Palestinian Territories. If the likelihood of further economic deterioration remains and financial access to food will remain the dominant difficulty for Palestinian households, the future efforts will need to focus on maintaining some level of food assistance, either through subsidies, food for work programs, voucher for food programs, job creation programs, price controls for nutrient rich foods, or some combination. A broad network of nutritional surveillance should begin immediately as any change in food assistance or added physical barriers to food by Israel could easily provoke a downturn in the nutritional indicators.

Introduction

A plethora of evidence, most notably from the World Bank, supports the notion that the Palestinian economy and its subsequent effects on livelihoods continue to deteriorate since the *Al Aqsa intifada* began in late September 2000.^{1,2,3,4} Economic and food security indicators that have appeared especially bleak over the three year period include:

- Jobs in higher paid sectors such as skilled labor, construction and agriculture disappeared, resulting in a drop in the wage ratio (wages per working population);
- Households living below the poverty line (US\$ 2.1 per person per day) by December 2002: nearly 60%, a three-fold increase since 1999;
- More than three quarters of the population in the Gaza Strip are considered poor;
- By the first quarter of 2003, 39.3% of the population were without work implying that nearly 1.7 million people may be in need of economic assistance;
- Food production on a per capita basis declined 2.9% since the institution of closures and curfews;
- Palestinian farmers have lost US\$845 million between 2000 and 2002;
- Real per capita incomes have dropped 46% since 1999, prompting households to cut consumption spending; and
- On average during 2002 and 2003, over 50% of Palestinian households have needed to borrow money for food while nearly 20% have sold assets to buy food.

The degree of violence has ebbed and flowed over the course of the uprising but what has remained consistent is the systematic movement constraints placed on goods and services as well as on the Palestinian population in general. Military incursions into West Bank urban areas during the Spring of 2002 that resulted in prolonged periods of curfew—periods during which individuals could not leave their homes for days at a time—compounded the devastation to the economy from March through October 2002 and raised the specter of rising food insecurity and nutritional deficiency. At the request of the Palestinian Ministry of Health (MoH), a rapid nutritional assessment was undertaken in the Summer of 2002 by partners Al Quds University (Jerusalem) and the Johns Hopkins Bloomberg School of Public Health (Baltimore) funded by the US Agency for International Development (USAID), through its Emergency Medical Assistance Project (EMAP) administered by CARE International. At that time, the assessment revealed the level of acute malnutrition was unacceptably high by international humanitarian standards in the Gaza Strip among children ages 6-59 months and that preschool age

¹ World Bank. Twenty-seven months—*intifada*, closures, and Palestinian economic crisis. May, 2003

² JHU/AQU/Maram/CARE. Health Sector Bi-weekly Report #16, Aug 2003.

³ Palestinian Central Bureau of Statistics. www.pcbs.org

⁴ Food and Agriculture Organization. Food Security Assessment, West Bank and Gaza Strip, 2003

children and reproductive age women were eating significantly below internationally accepted standards for daily energy and major micronutrient intakes (Table 1).

<i>Table 1: Prevalence of global malnutrition and selected macro and micronutrient deficiencies , children ages 6-59 months, July 2002</i>			
Indicator	West Bank n=416	Gaza Strip n=520	WB/GS* n=936
Global Acute Malnutrition (%) [§]	4.3	13.3	7.8
Global Chronic Malnutrition (%)	7.9	17.5	11.7
24 hour calorie intake (% <80% recommended intake)	55.8	59.2	57.1
24 hour protein intake (% <80% RDA**)	10.2	9.5	9.9
24 hour iron intake (% <80% RDA)	80.5	78.2	79.6
24 hour vitamin A intake (% <80% RDA)	54.0	67.2	59.2
24 hour folate intake (% <80% RDA)	51.6	47.7	50.1
24 hour zinc intake (% <80% RDA)	87.0	86.6	86.8

* Weighted by mid-2002 census estimates: West Bank = 0.609; Gaza = 0.391 for children < 5 years

§ Defined as percentage of the population below two standard deviations from the median, the combination of moderate and severe acute malnutrition

**Intake below 80% of the 1989 Recommended Dietary Allowances

By the late Summer of 2002, the nutritional assessment added to a growing critical mass of humanitarian information regarding the Palestinian population under curfew which prompted a United Nations sponsored visit and assessment by Catherine Bertini, the Secretary General's Personal Humanitarian Envoy. Her mission concluded that the Palestinian Territories had a serious humanitarian crisis, albeit a non-traditional one, and that "unless the situation improves, the lives of Palestinians will continue to deteriorate and the humanitarian crisis will quickly spiral out of control. Conversely, if the overall environment improves sufficiently to enable a free flow of people, goods and services, the humanitarian crisis will rapidly dissipate"⁵ Citing the easily reversible nature of the crisis, the report prompted some positive policy response from the Government of Israel (GoI) that, while by no means rectifying the movement constraints and the underlying

⁵ Bertini C. UN Mission Report, 11-19 August 2002.

causes of the growing desperation, did provide some relief to the Palestinian economy. Notably, in the fall of 2002, the GoI reissued limited work permits to laborers from the Palestinian Territories (roughly 16,000) and for a brief period resumed the transfer of frozen tax receipts to the Palestinian Authority. That coupled with a rise in short-term seasonal agricultural employment during the 4th quarter of 2002 appeared to lessen the steep decline of the Palestinian economy. Nonetheless, by the end of the third quarter of 2003, Gaza Strip unemployment (as defined by ILO standards) stands at 28.4%, the West Bank at 22.4% (a percentage that does not include the frustrated working-age population that have left the labor force and would arguably increase these figures significantly if included).⁶

Enhancing this modest assistance was a massive influx of humanitarian aid, in particular food aid, which began in the summer of 2002 and continues to the present. The United Nations Relief and Works Agency (UNRWA) and the World Food Programme (WFP) significantly increased its food aid from a combined 127,000 tons of food in 2002 to nearly 150,000 tons of food in 2003. Yet this represents a 64,000 ton shortfall.⁷ Between 2000 and 2002, UNRWA's food distribution caseload increased nine-fold and that of the World Food Programme (WFP) over three-fold. At the same time, Table 2 indicates a growing level of donor fatigue since the onset of the *intifada*; this diminution of remittances occurs while the conflict escalates and the household economic indicators deteriorate.

Table 2 : Percentage of remittances received for UNRWA appeals, Nov 2000 – Dec 2003⁸

	1 st Appeal 11/00 – 02/01	2 nd Appeal 03/01 – 05/01	3 rd Appeal 06/01 – 12/01	4 th Appeal 01/02 – 12/02	5 th Appeal 01/03 – 06/03	6 th Appeal* 07/03 – 12/03
% of total requested	112	61	83	56	42	51
*not yet completed						

In June 2002, the International Committee of the Red Cross/Red Crescent (ICRC) launched a voucher for food program covering 20,000 urban West Bank families and a direct food aid program covering 30,000 families in the rural West Bank. Both programs provided roughly 300,000 individuals with US\$90 of food items per month.

The concept of *food security*—a state where all people in a population have, at all times, the physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life—has emerged in the last twenty years as a critical concern for populations affected by armed conflict. The fact that food security should even be an issue in a place like the West Bank and Gaza Strip where food is plentiful in the marketplace and recent rainfall has been

⁶ Palestinian Central Bureau of Statistics. www.pcbs.org

⁷ FAO. Food security assessment: West Bank and Gaza Strip, 2003.

⁸ www.unrwa.org, accessed 22 May 2004.

adequate attests to the inevitable effects of conflict on the local economy and thus the population's ability to access food. Food security thus involves not only the physiological needs of the population (e.g. children need food of adequate nutritional amount and value to grow optimally), but also how the population balances other needs required for life and living (water, health, and education primarily). At risk are groups within the general population whose assets required for food acquisition may diminish over time, or whose physical access to food may be blocked or severely minimized. Food insecure populations are at risk for malnutrition and micronutrient deficiencies. Children, especially infants and preschool age children, are the most sensitive to changes in food security since they require adequate nutrition during this period of rapid growth and critical physical and cognitive development.

Despite the infusion of food aid that began in the summer of 2002, by the spring of 2003 about 40% of the Palestinian population (1.4 million) was food insecure with a further 30% (1.1 million) under threat of becoming food insecure.⁹ At that time, nearly nine months after the startling nutritional indicators were published, donors and humanitarian aid agencies wondered further: 1) could specific groups most vulnerable to food insecurity be identified to allow for more targeted food distribution; 2) were those households deemed most vulnerable to food insecurity be the accurate beneficiaries of the food aid; 3) what was the current state of nutrition in preschool age children given the massive food assistance instigated by the 2002 assessment (i.e. had acute malnutrition been adequately managed and had food assistance kept the cohort of chronically malnourished from getting larger); 4) were the households of malnourished children covered by food assistance; 5) had the quality of food intake changed since the 2002 assessment; and 6) what coping strategies were being used by the population to secure adequate quantity and quality of food and to what extent had they been exhausted. The Palestinian Ministry of Agriculture requested the UN Food and Agriculture Organization (FAO) to conduct a comprehensive assessment of food access and availability that would assist the PA in its Food Security strategy as well as inform donors on programming and intervention. Donors such as USAID and the European Union expressed an interest in a more focused assessment of food availability and stability of food supply and its distribution in order to arrive at a better understanding of overall food needs, the degree to which the Palestinian population was food insecure and dependent on food aid, and how best to support targeted, effective food interventions. For such key decision-makers, timely information on poverty, food insecurity and nutritional vulnerability would serve as a basis for making better decisions regarding relevant policies, strategies, and action programs and relief interventions to protect and promote food security and improve nutritional status.

⁹ FAO. Food security assessment: West Bank and Gaza Strip, 2003.

The dimensional aspects of food insecurity may be viewed and studied by a variety of approaches using several target populations. Food availability and access by communities, households, or individuals within households can be assessed using quantitative, qualitative, psychological, or social approaches that when taken together provide a comprehensive picture of the degree of food insecurity (Table 3).¹⁰ In keeping with this idea, an overall food security and nutritional assessment consisting of two distinct but complementary activities performed simultaneously was undertaken in the Palestinian Territories during the summer of 2003 to give an overall picture of the current state, on both a macro and micro level, of food security and nutrition. The first is

Table 3: Dimensions of food insecurity

	Individual level	Household level
Quantitative	Insufficient intake	Food depletion
Qualitative	Nutritional inadequacy	Unsuitable food
Psychological	Lack of choice, feelings of deprivation	Food anxiety
Social	Disrupted eating patterns	Food acquisition in socially unacceptable ways

a *qualitative* assessment by the Food and Agriculture Organization of the United Nations (FAO) that examines food access, food availability, and the degree to which the Palestinian population may or may not be reaching exhaustion in their attempts to maintain adequate food access. That assessment includes 225 focus group discussions, 975 semi-structured interviews, and 5-10 key informant interviews in cities, villages, and camps. The second activity is *this* assessment that provides a *quantitative* measure of nutritional status of the preschool aged population and how these relate to indicators of food security. It provides a quantitative validation of sorts for the FAO assessment since food security is better studied by the analysis of behaviors, thoughts, attitudes and motivations. For example, the FAO qualitative assessment provides information on the degree to which such household behavioral coping strategies such as choosing less expensive foods or selling assets for food have been utilized and exhausted. This assessment, the *Nutritional Assessment of the West Bank and Gaza Strip, 2003* quantifies the intake of cheaper, less nutritious food. **Thus, the overall state of food security and nutrition in the Palestinian Territories nearly three years into the *intifada* should be conceptualized with the reading of these two reports.**

The USAID West Bank/Gaza Mission, through the Emergency Medical Assistance Program (EMAP) managed by CARE International, commissioned researchers from the Johns Hopkins University School of Public Health (JHU, Dr. Greenough), under a sub-contract in EMAP to again assess the nutritional status of the population through a

¹⁰ Kendall A, Olson CM, Frongillo EA. Validation of the Radimer/Cornell measures of hunger and food insecurity. *J Nutr* 1995;125:2793-801

quantitative anthropometric assessment. Through a competitive tendering process, the Al Quds University (AQU) Nutrition and Health Research Institute (Dr. Abdeen, Mr. Qasrawi) was chosen to partner with JHU on the design, implementation, analysis, and interpretation of the quantitative assessment. EMAP partner American Near East Refugee Aid (ANERA, Ms Dandies) provided quality assurance and technical assistance.

Objectives

This assessment will attempt, in a quantitative manner, to describe the links between nutrition and food security in a first-world setting that vacillates between emergency relief, transition, and ongoing development. In so doing, we will describe:

- The prevalence of acute and chronic malnutrition in the Palestinian population of preschool aged children one year after intensive food aid;
- Sub-populations of preschool aged children that may be vulnerable to acute and chronic malnutrition;
- The quality of food consumption for preschool age children in terms of macro and micronutrients with a comparison of similar 2002 data;
- Critical food security indicators that can be quantified and the extent to which they affect food consumption; and
- The current level of food assistance and the degree to which that assistance is targeted appropriately.

Methodology

An area based sampling frame from the Palestinian Central Bureau of Statistics and updated in March 2003 was used in a two stage stratified design that yielded 2,497 households and 3,111 children ages 6-59 months of age. Of these, nine households refused to participate (non-response rate of 0.2%) and mothers of 22 children (0.7%) refused measurements to render a sample of 2,486 households and 3,089 preschool age children. Sample size was determined by the need to disaggregate data to the district level.

Each of the 16 districts in the Palestinian Territories consists of primary sampling units (PSUs), clusters containing 40,000 to 60,000 dwellings. PSUs are characterized as urban, rural, and refugee camp according to the last official census (1997). Current population is based on the mid-2003 estimates of the 1997 Census. The number of households chosen for each stratum was weighted in proportion to the urban, non-urban, and camp population of each district. A systematic random sample of PSUs was chosen from the urban and refugee camp strata representing areas of high population density (first stage).

Within each urban and camp stratum, computer-generated random samples of households were chosen (second stage). In the non-urban stratum, representing areas of lesser density PSUs, the next interval in a given direction from a randomly selected household was chosen. Only households with preschool aged children were selected in samples of low density PSUs to avoid systematic error of choosing only households without children. If the household in the interval did not have children, the nearest house with children in the direction of the interval was selected. Households with preschool aged children were of most interest for the purpose of gathering anthropometric and food consumption data; however, households with children are more likely to be more food insecure and more likely to be recipients of food aid and this should be recognized in evaluating the quantitative food security results of this report. The households selected in the 2002 assessment were not necessarily those selected in the 2003 assessment. Data collection for this assessment occurred June through August, 2003, a season during which there were no cultural feasts or festivals.

All twenty data collection teams (one for each of 12 districts, two for Jerusalem, Ramallah, Bethlehem and Hebron districts) consisted of two female individuals with nursing and/or public health degrees. All data collectors had previous experience in performing anthropometric measurements and using the Al Quds University 24 hour food recall questionnaire. Each team received training on administering the assessment questionnaire. A pilot study in one urban and on non-urban PSU cluster took place in June, 2003. Questionnaires were checked for completeness, accuracy, and bias at two levels prior to data entry: by field supervisors in the field, and by data entry staff at the central laboratory in Jerusalem. Households were called back for any questionable discrepancies. Field supervisors verified the quality of the data by randomly resampling 10% of the households. The questionnaire can be found in Annex 2.

Data processing and analysis was carried out using the EPI-INFO 6.0 and the Statistical Package for Social Sciences (SPSS) Windows Version 8.0 software programs. The anthropometric indicators of the 3,089 children included in the survey were calculated and analyzed using the EPINUT software program. Where appropriate, a chi square test of significance with one degree of freedom (except where indicated) was used to compare frequencies of populations with significance at $p < 0.05$.

Consent was obtained from the mother and/or head of household. The assessment was approved by the Al Quds University Committee for Human Subjects Research and, for the purposes of secondary analysis, by the Committee for Human Subjects Research, Johns Hopkins Bloomberg School of Public Health.

A. Anthropometric Measurements

The following anthropometric variables were collected:

- **Age in months.** Children between 6 and 59 months were included in the survey. Date of birth was obtained from parental recall, identification cards, or vaccination cards.

- **Sex.** Gender was recorded as male or female.
- **Weight.** The internationally field tested Tanita Baby/Adult Digital Scale 1582, graduated to 0.02 kg for infants (capacity to 14 kg), 0.1 kg for children (capacity to 136 kg), was used for weight measurements. Children were weighed barefooted, wearing only underwear.
- **Height.** Height to the nearest 0.5cm was taken on children able to stand against a wall with feet flat on their base, heels, buttocks, shoulders and back of the head touching the wall and head positioned looking straight ahead; a rigid headpiece marked the height on the wall and a tape measure was used to measure the floor to wall mark distance.
- **Length.** Length was taken on infants and toddlers unable to stand using the MeasureMat, a gauged mat with head and foot braces to minimize systematic error. With the mat on a hard, flat surface, infants were measured lying on their backs head touching the base facing straight ahead, backs and legs straight and flat against the mat, and feet positioned flat against the foot piece at a 90 degree angle. Length was measured to the nearest 0.1cm.
- **Refugee Status.** Persons registered with UNRWA and having an UNRWA registration number were considered refugees regardless of whether their home was in a refugee camp.
- **Level of employment.** Full-time employment was defined as 35 or more hours per week; part-time or partial employment as 20-34 hours per week; and underemployment, including unemployment, as less than 20 hours per week.
- **Maternal and/or Head of Household level of education.** Categories include those individuals who were either illiterate (unable to read or write) or had some level of education. “Primary” refers to completion of grade 6, “secondary” to completion of grade 9, and “high school” through grade 12. “Diploma” includes those who have finished a two-year program beyond high school, and “bachelor and above” those who have completed at least a four year baccalaureate program beyond high school or advanced university degree.

The following commonly used nutritional indices were defined and determined as follows:

- **Weight for height,** used as an indicator of acute malnutrition or wasting. The weight for height index expresses malnutrition evident immediately before and at the time of the survey, comparing the weight of the child with the weight of the reference population for the same height. The weight for height ratio reflects body proportion, or the harmony of growth, and is particularly sensitive to recent growth disturbances. The method of presenting the weight for height in Z- scores (standard deviations away from the median) is more statistically sensitive than that of expressing the weight for height as a percentage of the median. That is to say that for the same population of children whose weight for height is analyzed using both Z-score and the percentage of the median, a greater proportion of truly malnourished children will be found to be malnourished using the Z-score as the unit of measure. The classifications of cut off points for acute malnutrition in Z-score are presented in the inset box. Global acute malnutrition (GAM) is the

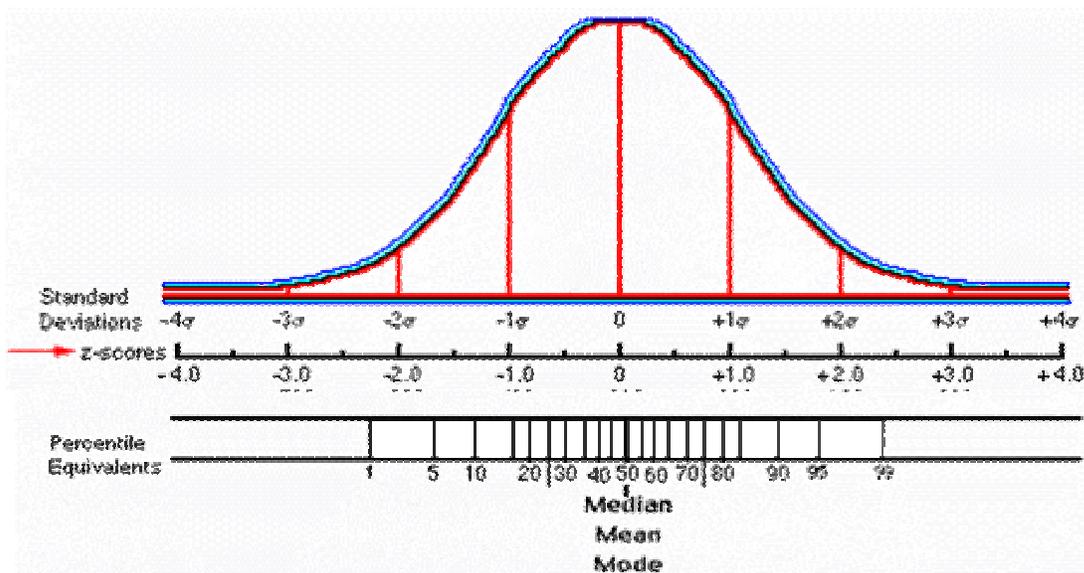
commonly used term defining the combined categories of moderate and severe acute malnutrition, or below $-2Z$ score, and as such represent the populations of greatest interest for humanitarian organizations and policy makers.

Z-score	Category	
$< -3 \text{ SD}^*$	Severe	} Global
$\geq -3 \text{ \& } < -2 \text{ SD}$	Moderate	
$\geq -2 \text{ \& } < -1 \text{ SD}$	Mild	
$\geq -1 \text{ SD}$	Normal	

- Height for age**, used as an indicator of chronic malnutrition or stunting. The height for age index expresses the past nutritional history (weeks to months to years) of a child rather than the current nutritional status, comparing the growth deficit for a child to the reference population of the same age. Height for age portrays performance in terms of linear growth, and essentially measures long-term growth faltering. The same classifications of Z scores and categories of severity also apply to chronic malnutrition. Thus, global chronic malnutrition (GCM) defines categories of moderate and severe chronic malnutrition (that less then $-2Z$ scores), again, the population of interest for interventions.

GAM and GCM can be defined then as that percentage of the population that lies to the left of $-2Z$ on a population curve (see Figure 1). For a relatively health population, that number is less than 2.3%.

Figure 1: Z-Scores expressed as standard deviation on a standard normal population curve



Diseases that affect the nutritional status of children are considered confounding variables. Diarrhea, defined as three or more watery stools in one 24 hour period during the two weeks prior to the survey, recurrent febrile illness, recent respiratory infection, chronic and acute worm infections, and chronic medical conditions were ascertained from the mother. Diarrhea illness, either acute or chronic, may result in poor gastrointestinal absorption of nutrients and effect weight and height measurements. Hookworm infection (*Ancylostoma duodenale*), is endemic in the Middle East particularly in areas of poor sanitation and lower socioeconomic conditions; chronic worm infections affect the absorption of iron in particular.

B. Food Consumption

The 24-hour food recall (24-HR) methodology is widely regarded as the only suitable dietary survey methodology used in national surveys aimed to describe the qualitative and quantitative food and nutrient intake of the population. The methodology is based on that which the United States Department of Agriculture (USDA) used in their continuing Survey of Food Intakes of Individuals 1994-96 (CSFII). Permission was granted to use and adapt the instruments and associated booklets. This methodology was further developed and modified specifically to the Palestinian diet by the Al Quds University Operational Research Laboratory Health and Nutrition Project Team. For example, this adaptation process included creating a food intake booklet (FIB) with pictures of Palestinian dishes that varied in volume, size, and weight and that were based on common Middle Eastern recipes. The nutrient composition of these recipes was calculated allowing for weight and nutrient loss in cooking. The 24-HR methodology for the Palestinian population was validated during the First Palestinian National Health and Nutrition Survey in 2000 (FPNHANS2000) which assessed the 24 hour dietary intakes of women 18-64 years of age.¹¹

One of the principal advantages of the 24-HR is its speed and ease of administration. Another major advantage of the 24-HR method is the fact that literacy of the respondent is not required. The interviewer administers and fills in the responses, which only require verbal answers from the recipient, allowing this method to be used across a wide range of populations. Additionally, the immediacy of the recall period means that respondents are usually able to recall most of their children's dietary intake of the previous day. Because the recalls take place after the food has been consumed, it means that the assessment method does not interfere with dietary behavior. The principal limitation of the 24-HR is that one cannot use the data from a single 24-HR to characterize the usual diet of an individual. The main use of a single 24-HR is to describe the average dietary intake of groups of individuals. The 24-HR is well suited, therefore, for measuring the current diet in groups of subjects, particularly where differences between group means are to be assessed. In general terms, group mean nutrient intakes from the 24-H-RQ have been found to be similar to observed intakes.

¹¹ Abdeen Z, et al. The First Palestinian National Health and Nutrition Survey, 2000.

All of the data collectors and field supervisors had previous experience on administering the 24-HR. Using households selected from the PSU clusters, the youngest child was chosen as the subject of interest for the 24-HR questionnaire. Included were children ages 13-59 months. Children 12 months old and under were not included because breastfeeding, a significant percentage of an infant's diet, has not been quantified sufficiently for use in the 24-HR.

In order to ensure the representativeness of the dietary intake data, the following safeguards recommended by the Nordic Cooperation Group of Dietary Investigators were employed:

- Respondents (mothers of the 13-59 month olds) were not given advance notice of the food recall interview so as not to influence children's dietary habits;
- Dietary aids that assist in identifying portion sizes were used;
- The interviews were evenly distributed over the days of the week for the sample as a whole; and
- The use of open-ended forms with pre-coded foods decreased errors in transcription.

The 24-HR interview was structured into three steps to maximize respondent recall of foods the child had eaten. The first pass, the 'quick list', involved respondents supplying a broad description of all food and beverage items consumed by the child in the previous 24 hour period (from 4:00 am to 4:00 am). In the next stage, a detailed description of each food or beverage item on the quick list was ascertained through a series of questions and prompts specific to each item. Questions for each item included: time of consumption, foods eaten in combination (hummus with olive oil, for instance), the cooking method, ingredients such as fats used in preparation, and a recipe for the food item where appropriate. When the respondent supplied a recipe the amount of each ingredient was obtained and the portion of the dish eaten was recorded. If the respondent did not know the recipe of a mixed dietary item, probe questions about ingredients likely to influence the nutrient content of the food (for example type of fat, milk, yogurt and/or cheese used) were asked. If the respondent was able to supply some information about these ingredients it was used to modify a standard recipe from top selling Middle Eastern cookbooks. These modified recipes were matched to mixed food items where the respondent, although unable to supply the entire recipe, had been able to give some ingredient information in response to the probe questions. The nutrient composition of these recipes, allowing for weight and nutrient loss in cooking, could then be calculated. Where the respondent had the package of a particular food available, the product name, weight, and nutrient information were recorded. With the aid of the FIB which contained photographs of food items in a variety of pre-weighed common portion sizes, the amount of food or beverages consumed was described by volume. The FIB provided conversions from the raw to the cooked form. The photographs in the FIB greatly reduce the frustration of respondents who formerly searched for words to describe volume, size, and weight of food items.

The final pass was a review of the recall. The interviewer read aloud the foods eaten by the child in chronological order and verified the descriptions and amounts consumed with

the respondent. Any information omitted from the recall or incorrectly entered was added or edited at this step.

After completion of a cluster, the questionnaires were checked by field coordinators and dispatched to a central site where they were checked again by a nutritionist prior to data entry to ensure that the data had correct food codes and was within reasonable limits in terms of the food quantities consumed. The EPI-INFO 6.0 and SPSS 8.0 programs were used for data entry and organization. For data entry, a template was created for each questionnaire using a database program. Experienced data entry staff keyed the data and the senior nutritionist then checked the entered data for any obvious errors. A printout of the data was made. This printout together with the original questionnaires was then sent to the senior project coordinator who checked the entered data manually, comparing the data on the questionnaires with that of the printouts, identifying and correcting any discrepancies. The data for the specific cluster was then added to the main database.

Food and beverages from the 24-HR were matched to food composition data to calculate nutrient intake using the most recent SurvNet software, NutriBase 2.0. The primary source of food composition information was the SurvNet Composition Database, compiled by the USDA, which contains the composition of approximately 6,000 foods. If a direct match with information in SurvNet/NutriBase was not available and the frequency of use was high relative to other foods, additional nutrient composition data was sought from British and Israeli databases.

Results and Discussion

A total of 2,486 households were sampled during July-August 2003. Sample size in given districts correlated closely with the population distribution in a given district (Table 4). The number of UNRWA registered refugees as of July 2003 (Table 5) were overrepresented in the West Bank sample (24.5% of the sample versus 18.0% of the West Bank population) but nearly represented the percentage of refugees in the Gaza Strip (69.3% of the sample versus 68.2% of the Gaza Strip population).¹² Theoretically, refugee households should have easier economic access to food assistance (from UNRWA) and thus the sample could underestimate the severity of food insecurity in the West Bank population. Since refugee status could potentially affect outcomes on food assistance and household income, these indicators will be examined for refugee and non-refugee sampled households where appropriate.

¹² Based on mid-2003 population estimates. www.pcbs.org

<i>Table 4: Distribution of household sample by district</i>			
District	n	%	% population 2002 estimate*
West Bank	1570	63.2	63.4
Jenin	165	6.6	6.8
Tubas	31	1.2	1.2
Tulkarem	110	4.4	4.5
Nablus	236	9.5	8.8
Qalqilya	63	2.5	2.5
Sulfit	42	1.7	1.7
Ramallah	157	6.3	7.4
Jericho	29	1.2	1.1
Jerusalem	273	11.0	10.8
Bethlehem	117	4.7	4.7
Hebron	347	14.0	13.9
Gaza Strip	916	36.8	36.6
North Gaza	173	7.0	6.9
Gaza City	312	12.6	12.9
Deir al Balah	131	5.3	5.3
Khan Younis	164	6.6	7.1
Rafah	136	5.5	4.4
Total	2486	100.0	100.0
*www.passia.org			

Similarly, refugee *camp* residents tended to be over-sampled in both the West Bank and Gaza Strip strata compared to the population distribution, while urban residents tended to be undersampled compared to their respective populations in both territories (Table 6). Camp residents will have easier economic and physical access to food and other humanitarian assistance. Again, each stratum will be analyzed in terms of food security and nutritional indicators as appropriate. Average sample household size was 6.6 and 8.2 persons in the West Bank and Gaza Strip respectively.

<i>Table 5 : Distribution of households by refugee status and area</i>			
Status	n	%	% population 2003 estimate*
West Bank	1570		
Refugee	384	24.5	18.0
Non-refugee	1186	75.5	82.0
Gaza Strip	916		
Refugee	635	69.3	68.2
Non-refugee	281	30.7	31.8
Total	2486	100.0	100.0
*UNRWA, PCBS			

<i>Table 6 : Distribution of households by locale and area</i>			
Area	n	%	% population 2002 estimate*
West Bank			
Urban	702	44.7	52.5
Non-urban	745	47.5	41.8
Camp	123	7.8	5.7
Gaza Strip			
Urban	498	54.4	63.5
Non-urban	50	5.4	5.3
Camp	368	40.2	31.2
Total	2486	100.0	100.0
www.passia.org			

A. Malnutrition

The 2,489 households yielded 3,089 children ages 6-59 months. Of the children, 51.4% were males and 48.6% were females, a gender ratio slightly favoring boys 1.06:1. This ratio is similar to previous nutrition studies in the Palestinian Territories. Table 7 presents the distribution of the survey population of children by age and gender.

<i>Table 7 : Distribution by age and gender for children 6–59 months</i>							
Age Group (months)	Boys		Girls		Total		Sex Ratio
	n	%	n	%	n	%	M/F
6 – 11	155	9.8	130	8.7	285	9.2	1.19
12 – 17	176	11.1	168	11.2	344	11.1	1.04
18 – 23	152	9.6	151	10.1	303	9.8	1.01
24 – 29	184	11.6	184	12.3	368	11.9	1.00
30 – 35	190	12.0	157	10.5	347	11.2	1.21
36 – 41	186	11.7	199	13.3	385	12.5	0.93
42 – 47	191	12.0	200	13.3	391	12.7	0.96
48 – 53	173	10.9	177	11.8	350	11.3	0.98
54 – 59	181	11.4	135	9.0	316	10.2	1.34
Total	1588	100.0	1501	100.0	3089	100.0	1.06

The prevalences of global acute and global chronic malnutrition, those below -2 Z scores, are highlighted in Table 8 with comparisons made to the AQU/JHU/CARE Nutritional Assessment of 2002 (Table 10). It is important to make the time distinctions between acute and chronic malnutrition in order to interpret these tables. *Acute malnutrition* is a

short-term indicator and reflects a *reversible* state of undernutrition—essentially a condition that has developed only days to weeks prior to the survey. It is to be interpreted then as a point prevalence, that is, the level of wasting at or around the time of the survey itself. *Chronic malnutrition*, or stunting, is an *irreversible* condition, and should be interpreted as a long-term indicator of undernutrition. Thus, the prevalence of chronic malnutrition may have developed over weeks to months to years, thus lending it to more apt comparisons between 2002 and 2003.

From the 2003 assessment the following observations can be drawn:

- Although both the West Bank and Gaza Strip prevalence of GAM at 3.1% and 3.9% respectively is above what would be expected for a normally nourished reference population (2.3% for two standard deviations from the median), this would **not** be considered a humanitarian emergency;
- There were no deaths from malnutrition in the preschool ages over the past year;
- Using chi square testing for significance, there is no significant difference between the West Bank and Gaza Strip distributions for GAM, however for GCM, the difference is significant at $p < 0.01$;
- West Bank non-urban and camp strata tend to have a higher prevalence of both GAM and GCM, although there was no significant difference between the strata for either the West Bank or Gaza Strip; and
- There were no differences between males or females for GAM or GCM in either the West Bank or Gaza Strip, although there was a *trend* to a higher prevalence of both GAM and GCM in males of both the West Bank and Gaza Strip (see Annex, Table A-3). Interestingly, this trend to a higher prevalence among preschool age males was also found in the 2002 findings.

<i>Table 8: Frequency and prevalence of global acute and chronic malnutrition, children ages 6-59 months by territory and locale</i>					
Territory and Locale	N	Global Acute Malnutrition (Weight/Height)		Global Chronic Malnutrition (Height/Age)	
		n < -2Z	% < -2Z	n < -2Z	% < -2Z
West Bank	1767	54	3.1	163*	9.2
Urban	781	18	2.3	63	8.1
Non-Urban	868	32	3.7	86	9.9
Camp	118	4	3.4	14	11.9
Gaza Strip	1322	52	3.9	168*	12.7
Urban	707	27	3.8	87	12.3
Non-Urban	123	1	0.8	14	11.4
Camp	492	24	4.9	67	13.6
Total	3089	106	3.4	331	10.7
* $\chi^2 = 7.7$, df = 1, $p < 0.01$					

Findings between strata need to be interpreted with caution as the overall prevalence of both GAM and GCM is small. For instance, the Gaza non-urban stratum size is small and lacks precision.

A change from 2002, however, is the finding that 6-23 month olds in the 2003 assessment are more likely to be acutely malnourished than the 24-59 month olds, a statistically significant finding; the latter group is more likely to be chronically malnourished than the 6-23 month olds (Table 9). This reflects the fact that the younger children are being weaned and introduced to solid foods and in general have had less time to become chronically malnourished than the older children. Nonetheless, attention should be paid to preventing the acutely malnourished infant/toddler from becoming chronically malnourished.

<i>Table 9 : Frequency and prevalence of global acute and chronic malnutrition, children ages 6-59 months by territory and locale</i>					
Territory and Locale	N	Global Acute Malnutrition (Weight/Height)		Global Chronic Malnutrition (Height/Age)	
		n < -2Z	% < -2Z	n < -2Z	% < -2Z
West Bank	1767	54	3.1	163	9.2
6-23 mo	510	22	4.3	42	8.2
24-59 mo	1257	32	2.5	121	9.6
Gaza Strip	1322	52	3.9	168	12.7
6-23 mo	422	27	6.4	44	10.4
24-59 mo	900	25	2.8	124	13.8
Total	3089	106	3.4	331	10.7
6-23 mo	932	49*	5.3	86	9.2
24-59 mo	2157	57*	2.6	245	11.4

* $\chi^2 = 13.4$, df = 1, p < 0.001

Table 10 presents the outcomes for the two nutritional studies. Although the sample sizes are quite different, several observations can be made:

- Realizing that acute malnutrition indicates a short-term condition of malnutrition, one can say that preschool aged children in 2003 are less likely to be acutely malnourished in both the West Bank and *especially* the Gaza Strip than children of similar age in 2002.
- Chronic malnutrition, in comparison to acute malnutrition, represents a longer term indicator of nutritional status and is more amenable to comparison over time. Thus, the prevalence of GCM in the Gaza Strip has diminished significantly from 2002 to 2003. The 2003 prevalence of GCM in Gaza is more in line with a 1998

- pre-intifada UNRWA/CDC (US) study with the same methodology that found a GCM prevalence of 13.3% among preschool aged refugee children.¹³
- However, in the West Bank, there is an increase in GCM from 2002 to 2003, that, although not statistically significant, may reflect a trend that warrants following.

Acutely malnourished children will, within time, become chronically malnourished. Timely food assistance that began in the summer of 2002 prevented the acutely malnourished in the Gaza Strip in 2002 from becoming the chronically malnourished in 2003. In addition, the 4-5 year olds in the cohort of Gaza youngsters in 2002 were more likely to be chronically malnourished than those infants that replaced them in the 2003 cohort. Both of these factors contributed to diminishing the prevalence of GCM in Gaza from 2002 to 2003. We believe that sustained food assistance and attention to nutrition by stakeholders and the Palestinian MOH kept the 2003 Gaza Strip prevalence of GAM to a non-emergency level.

Table 10 : Comparisons of malnutrition prevalence, 2002 and 2003

Locale	Year 2002 ¹⁴ n=936 %<-2Z	Year 2003 n=3089 %<-2Z
West Bank		
GAM	4.3	3.1
GCM	7.9	9.2
Gaza Strip		
GAM	13.3	3.9
GCM	17.5	12.7
TOTAL		
GAM	7.8	3.4
GCM	11.7	10.7

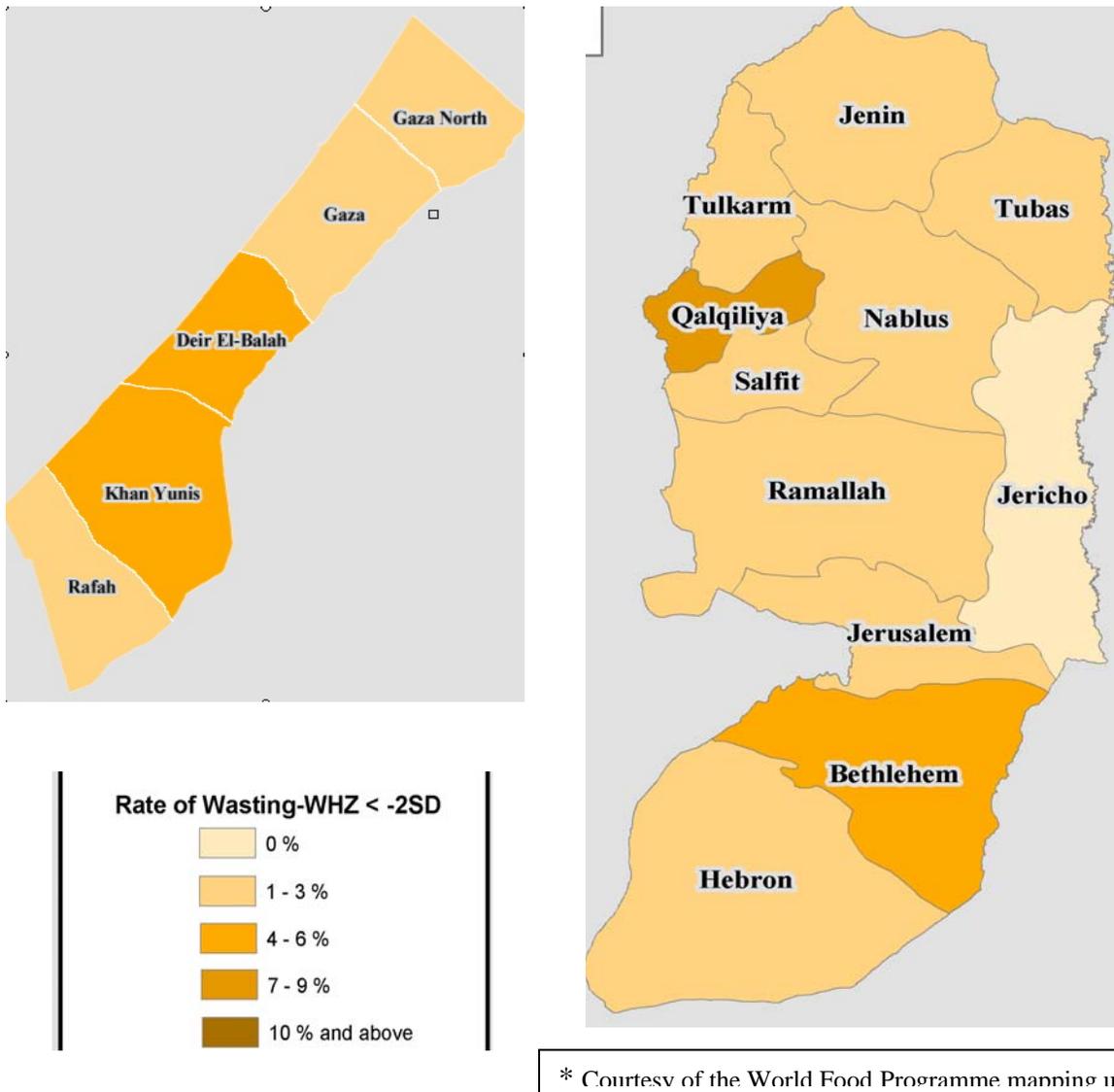
Nonetheless, in the West Bank, a trend towards a greater prevalence in GCM is concerning and likely reflects both the worsening economic condition of the West Bank—the districts most affected are those in the North with a significant loss of income due to the impact of the Separation Barrier (see Figure 3 and Annex Tables A-2 and A-4)—as well as the general lack of attention to food assistance paid to the West Bank in lieu of Gaza during this period (see “Food Assistance” section below). The change in the prevalence of GAM in the West Bank is within the range of error and not statistically significant.

¹³Pervanta I, Galuska D, Simpson ME. Gaza nutrition survey, October 1998. UNRWA/CDC, 1999.

¹⁴ Al Quds University/Johns Hopkins University/CARE. The Nutritional Assessment of the West Bank and Gaza Strip, Sept 2002.

Figures 2 and 3 below provide a graphic description of the distribution for GAM and GCM in 2003 (see also Annex A-3). Qalqilya, the district whose chief city and adjacent villages are surrounded on three sides by the “Barrier” has the highest prevalence—8.0%. Bethlehem district has had recurrent problems of both physical and financial food access beginning with the military incursions of 2002 through two seasons of curfew in summer and early fall of 2002.¹⁵ Deir el-Balah and Khan Yunis have significant populations of urban and non-urban poor.

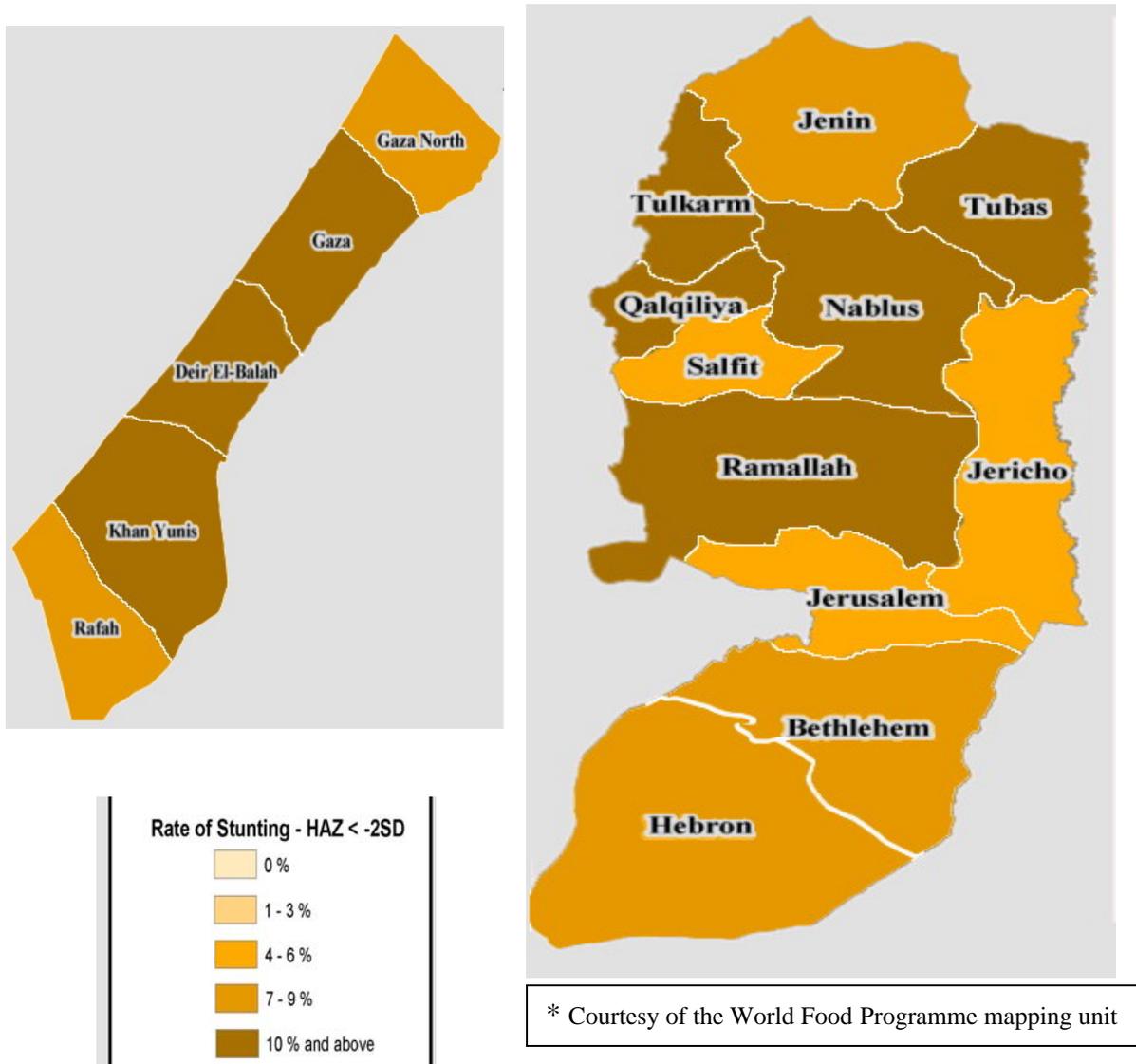
*Figure 2: Global acute malnutrition prevalence by district, 2003**



¹⁵ JHU/AQU/Maram/CARE. Health Sector Bi-weekly Report #13; The Yearly Report: May 2002-May 2003.

As mentioned, northern West Bank districts in general show a greater prevalence of GCM found more commonly in the rural areas and refugee camps of these districts. The Gaza Strip is essentially a different population—almost entirely urban and refugee camp with little distinction between the two in terms of GCM prevalence.

*Figure 3: Global chronic malnutrition prevalence by district, 2003**



The frequencies and prevalence of GAM and GCM in the preschool aged population of registered refugees and non-refugees are highlighted in Table 11. In general, the refugee population of preschool aged children (includes those living outside of organized camps as well as camp residents) have a higher prevalence of both GAM and GCM, with the

latter statistically significant. In general, poorer children are more likely to be chronically malnourished and refugee children will more often come from poorer families. In addition, refugee status does not guarantee definitive access to food assistance since 28.9% of our sample of refugee children live outside of camps.

Table 11 : Frequency and prevalence of global acute and chronic malnutrition, children ages 6-59 months by refugee status

Status	N	Global Acute Malnutrition (Weight/Height)		Global Chronic Malnutrition (Height/Age)	
		n < -2Z	% < -2Z	n < -2Z	% < -2Z
Refugee	1331	52	3.9	165*	12.4
West Bank	425	15	3.5	45	10.6
Gaza Strip	906	37	4.1	120	13.2
Non-Refugee	1758	54	3.1	166*	9.4
West Bank	1342	39	2.9	118	8.8
Gaza Strip	416	15	3.6	48	11.5
Total	3089	106	3.4	331	10.7

* $\chi^2 = 6.9$, df = 1, p < 0.01

The 2002 cohort of both registered refugee children and non-refugee children were significantly more likely to have GAM or GCM than both of these groups in 2003 (prevalence of GAM in 2002 refugee children was 9.6%; of GCM, 15.1%). The refugee children showed a greater improvement in GCM prevalence compared to the non-refugee population between 2002 and 2003, although the difference between the prevalence of GCM among refugee children in 2002 and 2003 was not statistically significant.

A comment should be made on variables that affect nutrition for preschool age children. Diarrhea, defined as three or more watery stools in one 24 hour period during the two weeks prior to the survey, had a baseline prevalence in the sample population of 18.9%, a prevalence identical to what we have found in household surveillance data over the course of a year.¹⁶ Hookworm infection (*Ancylostoma duodenale*), an endemic problem in areas of poor hygiene and socioeconomics, had a prevalence of 11.2% in the sample. Other confounding diseases that may affect nutritional intake and their prevalence in our sample included:

- Recurrent febrile illness: 1.3%
- Recent respiratory infection: 18.6%
- Chronic medical conditions: 0.6%

¹⁶ ibid

Anthropometric measurements should be interpreted in light of these underlying confounding variables.

B. Food Consumption

From the 2,489 households, the mothers whose youngest child was 13-59 months of age underwent the 24-HR, yielding 2,132 children. Of these, 105 (4.9%) were non-respondents to yield a final sample of 2,027. The distribution of children is found in Table 12. All foods consumed are expressed in grams or milliliters. Protein and micronutrient intake presented here is referenced against the Recommended Dietary Allowances (RDA) of the U.S. Food and Nutrition Board.¹⁷ The RDA is that level of intake for essential macro or micronutrients that, on the basis of comprehensive scientific study, are considered by the Board to be adequate to meet the known nutrient needs of 98% of the healthy population. Intake of less than 80% of RDA defines a macro or micronutrient deficiency in most developed countries including Israel. The RDA for children is based on the median for age intervals of 1-3 years and 4-5 years of age. Energy intake presented here reflects the *average* needs of individuals based on resting energy expenditure and activity level for a given age. We define energy intake deficiency as less than 80% of the daily Recommended Energy Allowances (REA) for light to moderate activity, the accepted values of the USAID Food for Peace Commodities Reference Guide for preschool age children.¹⁸

Carbohydrates, fats, and proteins provide an individual's dietary energy fuel and are termed macronutrients; vitamins and minerals are termed micronutrients. Tables 13-19 describe the percentage of children ages 13-59 months of age that lie below the 80% REA of dietary intake for energy and below the 80% RDA level of dietary intake for protein and the micronutrients Vitamins A and E, folate, iron, and zinc. The graphs that accompany each table illustrate the comparison between our 2002 study of 477 children ages 13-59 months who underwent the 24-HR exactly one year prior to the 2003 cohort. Comparisons are made between the daily median intake in the amount of each macro and micronutrient in 2002 and 2003 both for 1-3 year olds and 4-5 year olds. Median figures provide a better measure of central tendency.

For *all* nutrients highlighted in this assessment—energy, protein, vitamins A, E, and folate, minerals iron and zinc—there was, to a greater or lesser degree, a *decrease* in consumption for preschool children in both the West Bank and Gaza Strip. The decreases in consumption for *all* of these nutrients, with the exception of vitamin E, were worse in Gaza than the West Bank.

¹⁷ National Research Council. Recommended Dietary Allowances, 10th edition. Washington, DC: National Academy Press, 1989.

¹⁸ www.usaid.gov/our_work/humanitarian_assistance/ffp/crg/annex-3.htm

<i>Table 12: Distribution of 24-HR child respondents by age and gender, West Bank and Gaza Strip</i>		
Respondents		N
Male	1 – 3 years	878
	4 – 5 years	290
	TOTAL	1168
Female	1 – 3 years	662
	4 – 5 years	197
	TOTAL	859
Total		2027

Macronutrient Intake

Defining standards for energy intake (described in kilocalories/day) is particularly difficult in preschool aged children since their energy balance depends on their level of activity and intake, both of which are often quite irregular in this age group. Thus comparing a population’s energy intake with a standard should be evaluated in terms of this balance between intake and expenditure. Since energy, based on the intake of carbohydrates, fats and to a lesser degree proteins, provides the fuel for all metabolic activity, energy deficiency affects physical activity, cognitive function, awareness, and growth in general. When proteins are “burned” for energy, in states of inadequate carbohydrate and fat intake, or when dietary protein is inadequate, muscle wasting, growth retardation, and cell death occur.

For 1-3 year olds, a median energy intake below 1,040 kcal/day (less than 80% of REA) is considered an energy intake deficiency; for 4-5 year olds, below 1440 kcal/day intake is an energy intake deficiency. Table 13 shows that, in general:

- Energy intake decreases with age in Palestinian preschool children when, ideally, it should be *increasing* due to increased demand from growth and activity; and
- Energy deficiency is more profound in the Gaza Strip than the West Bank children; daily consumption of energy in kcal/day is 8.3% lower in Gaza than the West Bank.

Comparisons of 2003 with 2002 median daily energy intakes demonstrate concerning trends:

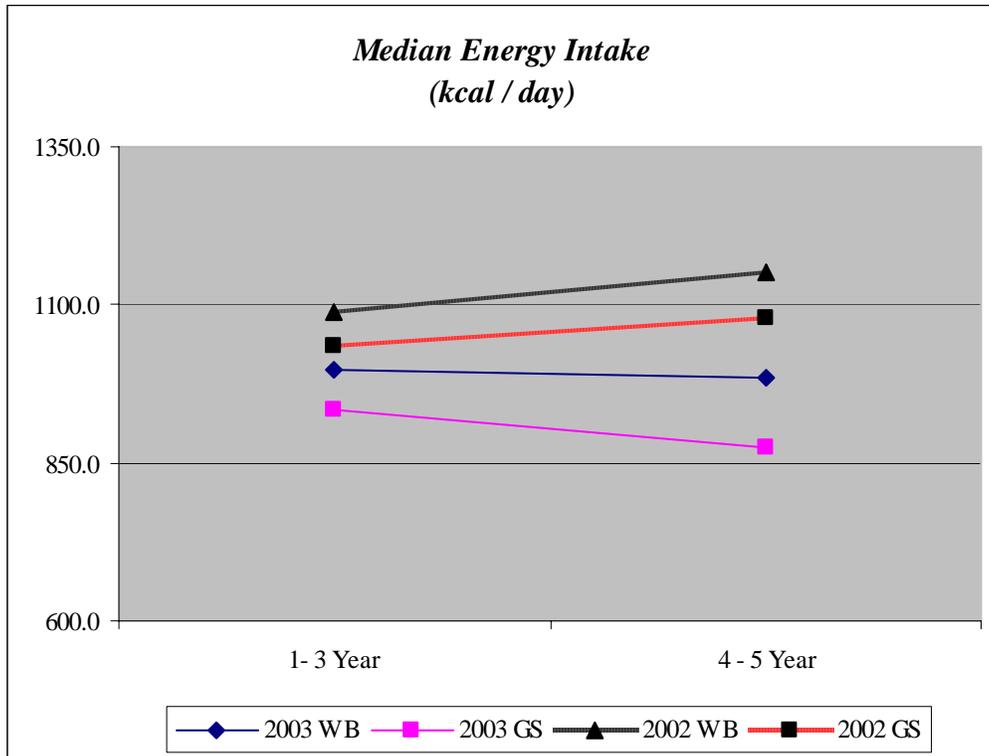
- In both age intervals, there is a significant decrease in median daily energy intakes: for 1-3 year olds, an 8.3% drop, for 4-5 year olds, a 13.2% drop, with the greater decrease in Gaza, a 19.2% drop; and
- In stark contrast to 2002 and any other normally eating society, older children in the 2003 sample are consuming on average *less calories* than the younger

children. Arguably this drop in daily calorie intake as children age is a marker for increasing food insecurity.

Table 13: Percentage of Palestinian preschool age children with energy intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% REA	Gaza Strip % < 80% REA
1-3	Urban	53.7	62.0
	Non-urban	57.0	55.6
	Camp	46.8	58.7
	Total	55.5	61.7
4-5	Urban	87.7	91.4
	Non-urban	88.4	100.0
	Camp	74.5	92.1
	Total	85.8	92.5

* < 80% of Recommended Energy Allowance (REA)



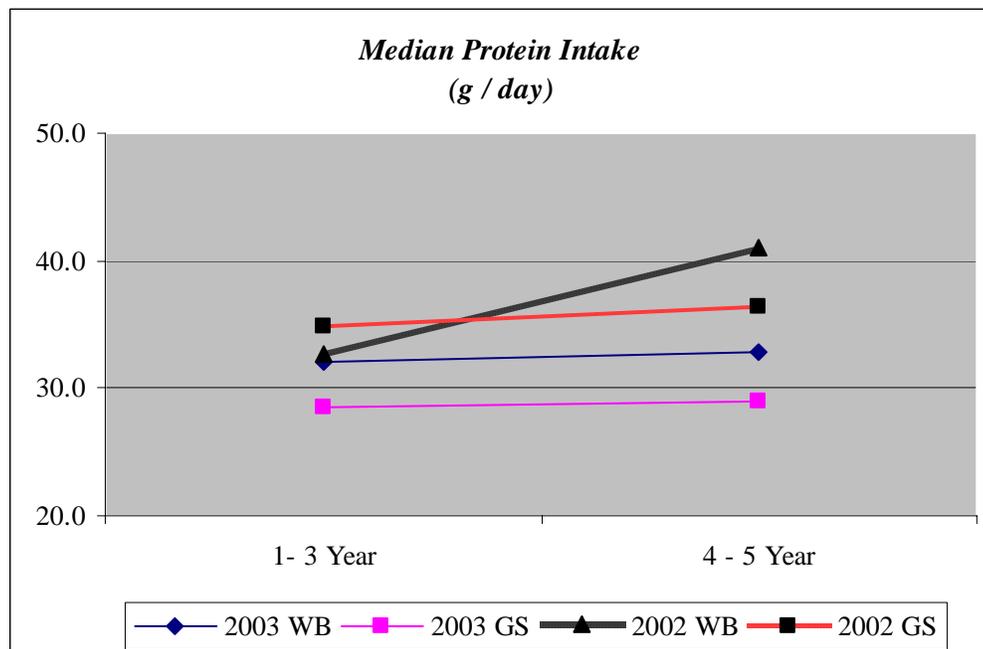
Protein intake is measured in grams/day. Deficiency, defined as a daily protein intake less than 80% of RDA, is less than 12.8 grams/day for 1-3 year olds, less than 19.2 grams for 4-5 year olds. From Table 14:

- A greater proportion of 4-5 year olds have protein deficiency relative to 1-3 year olds; and
- Protein deficiency has a higher prevalence among Gaza preschool children than West Bank preschool children.

Table 14: Percentage of Palestinian preschool age children with protein intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% RDA	Gaza Strip % < 80% RDA
1-3	Urban	3.2	8.2
	Non-urban	4.3	11.1
	Camp	2.1	8.4
	Total	4.5	8.0
4-5	Urban	14.7	20.0
	Non-urban	13.4	35.3
	Camp	6.4	18.3
	Total	12.7	18.7

* < 80% of Recommended Dietary Allowances



In comparing median protein intakes between 2002 and 2003 we note:

- Daily protein intake dropped 10.8% in 1-3 year olds and 16.7% in 4-5 year olds;
- Daily consumption of protein is consistently lower in Gaza than the West Bank by 3 gm/day in 2003; and
- Protein intake, like energy intake, does not increase with age in 2003.

Micronutrient Intake

The Vitamin A deficiency disorders (VADD) lead to impaired immune function, growth retardation, loss of appetite, night blindness and eventual permanent blindness from corneal lesions, as well as increases the risk of mortality from measles and diarrheal disease in less developed countries. Zinc deficiency is getting more attention from international health experts due to its association with immune dysfunction and a general decrease in host resistance, critical in malnourished and stressed populations which are already more prone to infectious diseases. Vitamin E, as an anti-oxidant, protects cell integrity particularly in the nervous system where deficiencies can result in a number of neurologic deficits. Iron and folate (folic acid) are essential for red blood cell development; deficiencies of these result in anemia and subsequent cognitive and growth delay.

Much attention has been focused on the need for adequate documentation of vitamin A status in countries with under 5 mortality rates greater than 20 deaths/1000 live births (U5MR in the Palestinian Territories was 25/1000 births in 2002).¹⁹ Such documentation requires studies with serum retinol levels—this assessment simply suggests a deficiency based on a 24 hour vitamin A intake and hints at the need for vitamin A supplementation. Using plasma levels of vitamin A, a USAID study of 1,107 Palestinian children ages 12-59 months recently showed a 22.0% prevalence of low serum retinol levels (<200 mcg/L) rising to a prevalence of 75.9% when the cut-off values are < 300 mcg/L with children in the Gaza Strip significantly worse for both categories. Such a prevalence puts the Palestinian Territories in a severe public health category by international standards, necessitating a population based intervention.²⁰

Vitamin A intake is measured in mcg of Retinol Equivalents/day. Deficiency, defined as a daily vitamin A intake less than 80% of RDA, is less than 400 mcg RE/day for 1-3 year olds, less than 500 mcg RE/day for 4-5 year olds. The percentage of the preschool age population eating below 80% RDA for vitamin A is elaborated in Table 15. Observations include:

- For both age intervals, Gaza children have a higher prevalence of vitamin A deficiency; and

¹⁹ Sommer A, Davison FR. Assessment and control of vitamin A deficiency: the Annecy Accords. *J Nutr* 2002; 132:2845S-2850S.

²⁰ USAID, The Maram Project. Prevalence of vitamin A deficiency among children 12-59 months of age in the West Bank and Gaza Strip, May 2004.

- In general, a majority of Palestinian children are eating at below standards for vitamin A.

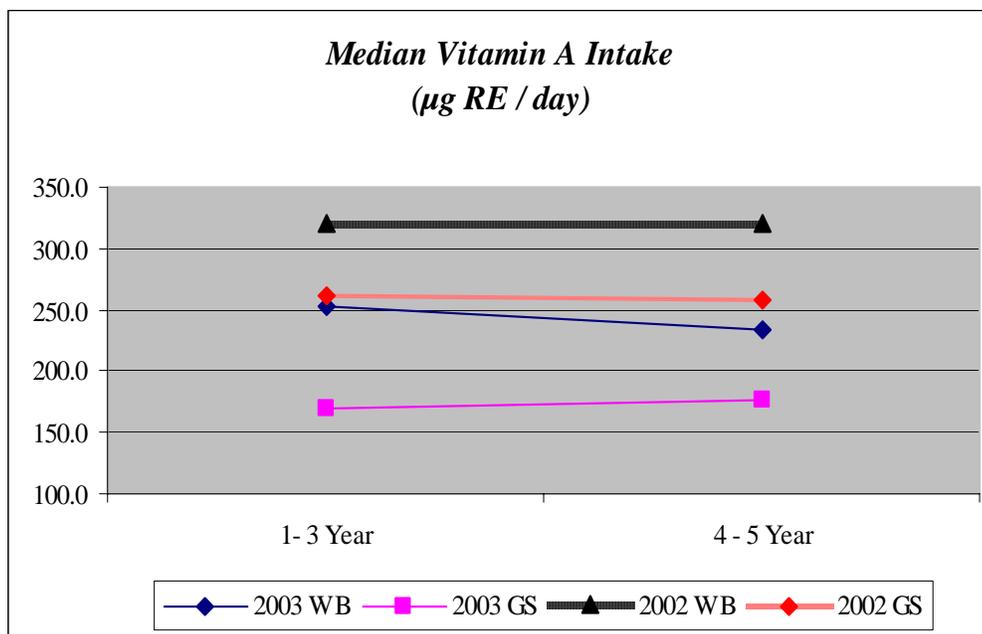
Table 15: Percentage of Palestinian preschool age children with Vitamin A intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% RDA	Gaza Strip % < 80% RDA
1-3	Urban	65.3	81.7
	Non-urban	65.0	94.4
	Camp	55.3	76.8
	Total	64.1	79.5
4-5	Urban	77.7	88.1
	Non-urban	72.5	100.0
	Camp	63.8	84.9
	Total	75.1	88.1

* < 80% of Recommended Dietary Allowances

The following graph indicates:

- From 2002 to 2003, daily Vitamin A intake dropped 23.6% for 1-3 year olds and 19.9% for 4-5 year olds; in the West Bank, consumption declined with age in 2003.
- Daily consumption of Vitamin A is 30.9% lower in Gaza than in the West Bank in 2003.



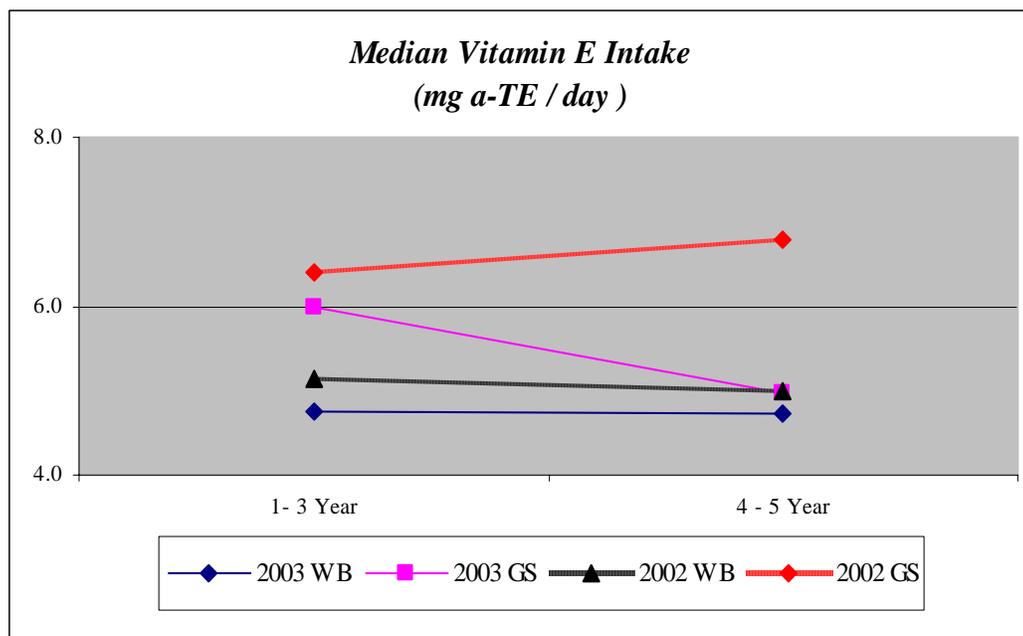
Vitamin E intake is measured in milligrams of alpha-tocopherol/day. Deficiency, defined as a daily protein intake less than 80% of RDA, is less than 4.8 mg/day for 1-3 year olds, less than 5.6 mg/day for 4-5 year olds. From Table 16 and its accompanying graph:

- Roughly half the Palestinian children eat below levels defined as deficiency for vitamin E;
- Vitamin E intake does not increase with increasing age in 2003 further emphasizing that the 4-5 year olds are a particularly vulnerable group in terms of quality of food intake; and
- Between 2002 and 2003, there was a 10.5% drop in vitamin E intake for 1-3 year olds and a 23.0% drop for 4-5 year olds.

Table 16: Percentage of Palestinian preschool age children with Vitamin E intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% RDA	Gaza Strip % < 80% RDA
1-3	Urban	53.7	43.4
	Non-urban	46.7	22.2
	Camp	40.4	41.0
	Total	50.7	41.5
4-5	Urban	48.6	48.1
	Non-urban	52.5	58.8
	Camp	57.4	49.2
	Total	51.3	49.3

* < 80% of Recommended Dietary Allowances



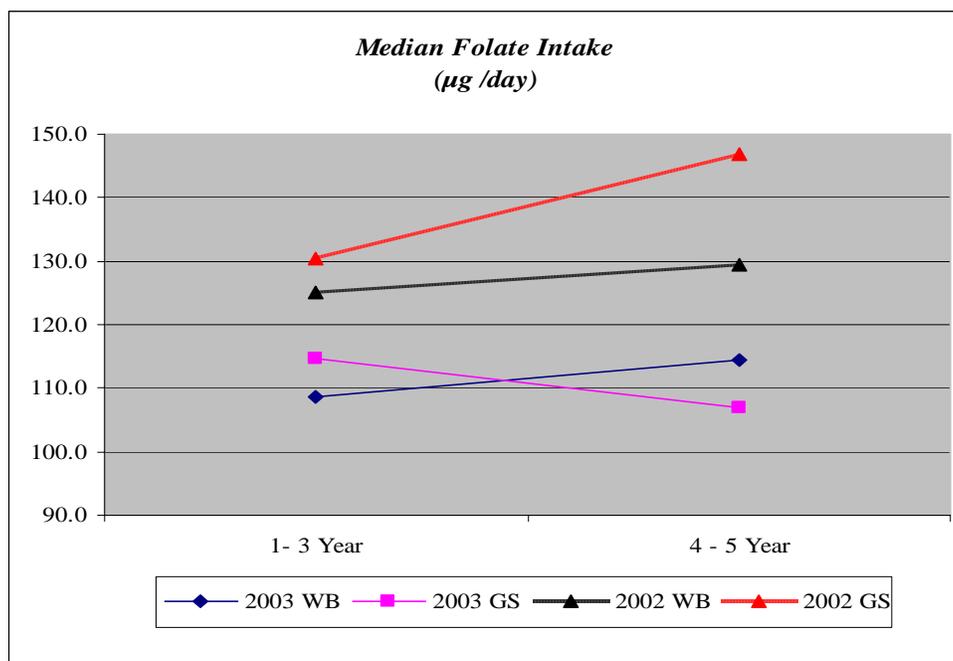
Deficiencies in the vitamin folate (folic acid) lead to anemia, and in pregnant women, low birth weight and fetal neurologic abnormalities. For 1-3 year olds, a daily intake less than 120 µg/day, and for 4-5 year olds less than 160 µg/day, constitutes a deficiency. From Table 17 and its accompanying graph:

- Over half of 1-3 year olds and over three fourths of 4-5 year olds are folate deficient;
- Children 1-3 years of age consumed 11.3% less and 4-5 year olds consumed 18.9% less folate in 2003 compared to 2002; and
- In Gaza, children ate less folate with increasing age in 2003—this subgroup showed a 27.0% drop in folate intake from 2002.

Table 17: Percentage of Palestinian preschool age children with folate intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% RDA	Gaza Strip % < 80% RDA
1-3	Urban	57.5	55.3
	Non-urban	57.9	55.6
	Camp	55.3	47.7
	Total	56.6	53.9
4-5	Urban	76.7	73.8
	Non-urban	76.8	94.1
	Camp	72.3	74.6
	Total	76.3	77.6

* < 80% of Recommended Dietary Allowances

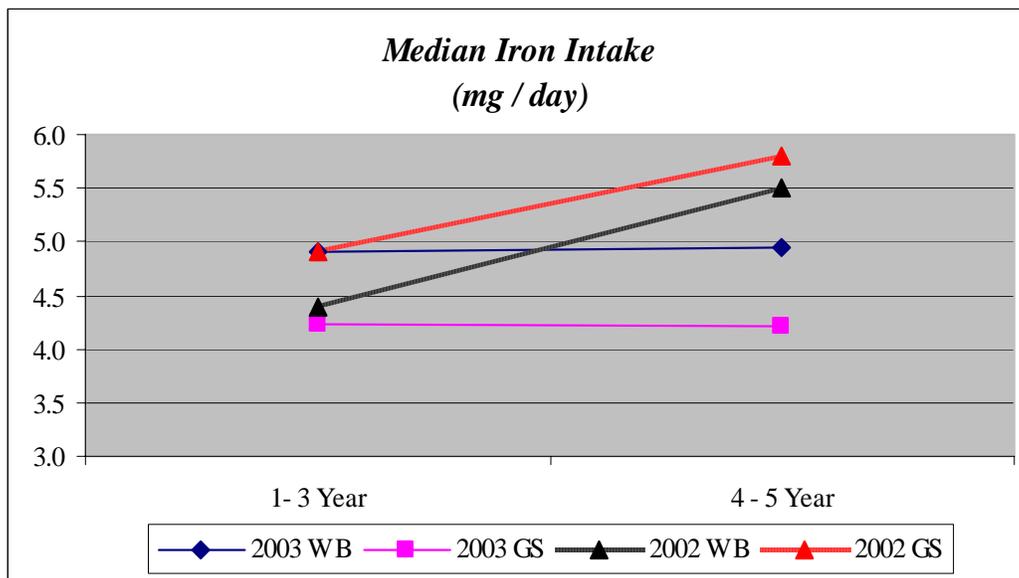


Iron was highlighted in our 2002 Nutritional Assessment specifically for its influence on anemia. For all children less than age 5, intake less than 8.0 mg of iron is considered iron deficient. Suffice it to say, the vast majority of Palestinian children are iron deficient (Table 18) which validates the 2002 findings of a 44% prevalence of anemia in this population.²¹

Table 18: Percentage of Palestinian preschool age children with iron intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% RDA	Gaza Strip % < 80% RDA
1-3	Urban	81.4	88.0
	Non-urban	81.7	88.9
	Camp	78.8	84.5
	Total	81.3	88.7
4-5	Urban	83.6	84.1
	Non-urban	84.9	100
	Camp	80.9	90.9
	Total	84.4	87.3

* < 80% of Recommended Dietary Allowances



²¹ Al Quds University/Johns Hopkins University/CARE. The Nutritional Assessment of the West Bank and Gaza Strip, Sept 2002.

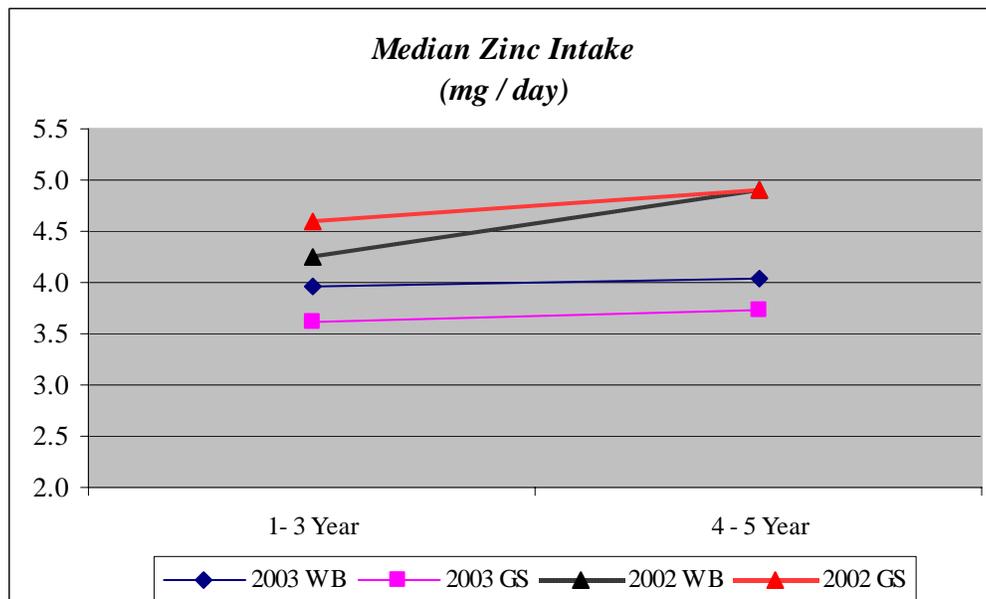
As noted in the graph above, between 2002 and 2003 there was a 15.0% overall drop of iron intake for 4-5 year olds, particularly in the Gaza Strip where the percentage change was 27.6%. Younger children ages 1-3 years showed no significant change between the two years suggesting that iron intake, and in particular supplementation, is targeted to those children still receiving vaccinations and routine well child visits.

Zinc is a mineral critical for immune system function as well as skeletal maturation. Because it is found in meat, seafood, and eggs—also sources of high protein and thus prohibitively most expensive for Palestinian households, it is not too surprising that nearly all Palestinian children (Table 19) eat below the 80% RDA for zinc (8.0 mg/day for children 1-5 years of age).

Table 19: Percentage of Palestinian preschool age children with zinc intake deficiency*, by age and location, 2003

Age Class (years)	Locale	West Bank % < 80% RDA	Gaza Strip % < 80% RDA
1-3	Urban	94.0	93.3
	Non-urban	94.7	94.4
	Camp	95.7	96.1
	Total	95.0	94.4
4-5	Urban	96.2	90.2
	Non-urban	94.7	100.0
	Camp	97.9	97.7
	Total	95.2	93.3

* < 80% of Recommended Dietary Allowances



Based on the graph above:

- Children 1-3 years of age consumed 11.6% less and 4-5 year olds consumed 18.4% less zinc in 2003 compared to 2002; and
- The greatest drop occurred in Gaza where children ate 24.2% less zinc in 2003 compared to 2002; in the West Bank, the percentage drop was 9.1%.

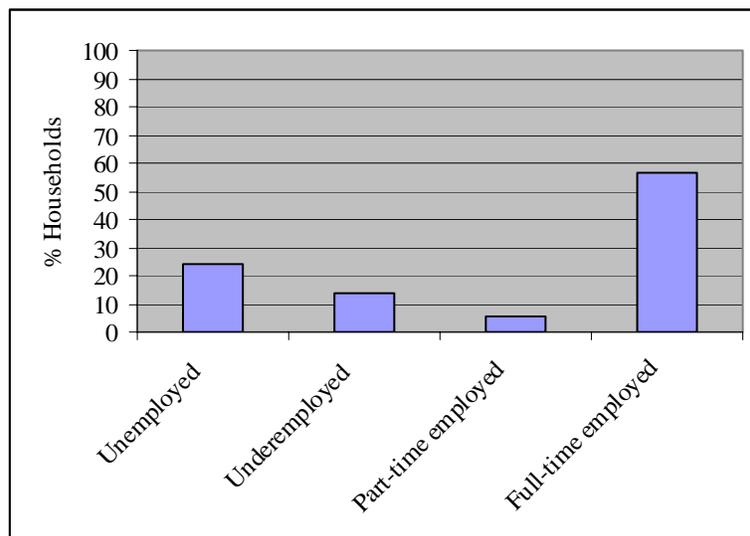
Despite the reassuring figures for GAM and GCM, the evidence for the fact that preschool age children are eating a more inferior diet after one year of assessment indicates a concerning trend, particularly since micronutrient deficiencies have long-term consequences.

C. Food Security

Poverty is one of the biggest risk factors contributing to undernutrition in children. The employment status of the parents determines whether adequate economic resources are available at the household level, including cash to buy food. Level of income from both formal and informal employment as well as other sources of remittances will determine the quantity and quality of the household food purchased. While the FAO assessment provides a qualitative analysis of household food security, this report attempts to look at household food and economic indicators that can be quantified; the combination provides an overall picture of the degree to which households are stressed to provide food for their members.

Graph 1 describes the distribution of employment level in the sample. Of the 2,486 households sampled, 24.1% of the households had no members working; 14.0% had at least one member working up to 20 hours per week (underemployed); 5.3% had at least one member working 20-34 hours per week (part-time employment); and 56.6% had at least one member with full-time employment (35 or more hours per week).

Graph 1: Distribution of employment in 2,486 households



If we define households at risk of being food insecure as those who have at least one member either underemployed or unemployed, that is, a household supporting level of employment numbering less than 20 hours per week, then we can infer certain districts at a general risk of food insecurity (Table 20). In the West Bank, the districts of Bethlehem, Jenin, Tulkarem, and Qalqilya are most affected by low levels of employment. The Gaza Strip districts in general show a greater degree of low or no household employment compared to the West Bank.

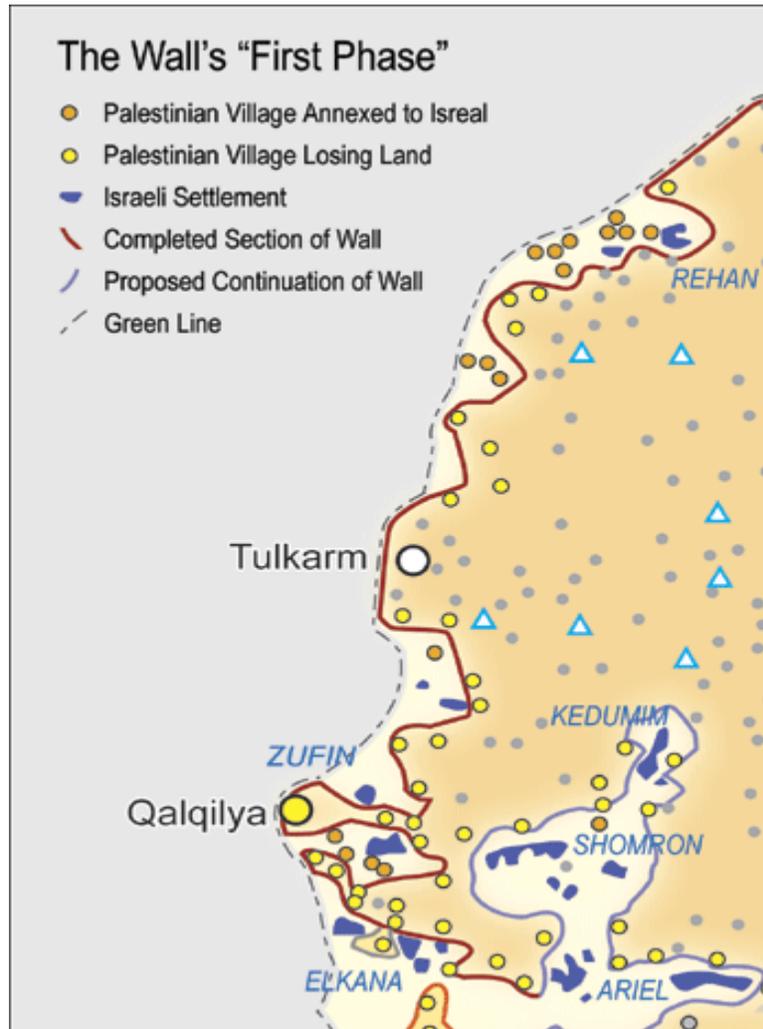
Table 20 : Distribution of households by level of employment and district

Area	HH n	Level of Employment			
		<20 hrs/wk		≥20hrs/wk	
		n	%	n	%
West Bank	1570	534	34.0	1036	66.0
Jenin	165	75	45.5	90	54.5
Tubas	31	9	29.0	22	71.0
Tulkarem	110	64	58.2	46	41.8
Nablus	236	100	42.4	136	57.6
Qalqilya	63	35	55.6	28	44.4
Sulfit	42	15	35.7	27	64.3
Ramallah	157	27	17.2	130	82.8
Jericho	29	4	13.8	25	86.2
Jerusalem	273	46	16.8	227	83.2
Bethlehem	117	69	59.0	48	41.0
Hebron	347	90	25.9	257	74.1
Gaza Strip	916	413	45.1	503	54.9
North Gaza	173	70	40.5	103	59.5
Gaza City	312	135	43.3	177	56.7
Deir al Balah	131	68	51.9	63	48.1
Khan Yunis	164	67	40.9	97	59.1
Rafah	136	73	53.7	63	46.3
Total	2486	947	38.1	1539	61.9

The latter three districts of the West Bank, Jenin, Tulkarem, and Qalqilya account for 45% of the West Bank’s agricultural production and are notable in that they border the Separation Barrier being built by the Government of Israel and where construction had just been completed prior to data collection. Sixteen villages (11,550 people) in these three districts find themselves trapped in a closed military zone between the 1967 border with Israel and the Barrier—a combination high wall/fence that limits the access of these villages to the rest of the West Bank (see Figure 4). In addition, the Barrier cuts off 50 villages from their agricultural lands, the wells that nourish those lands, and West Bank food markets. Over 3000 families whose homes and villages are east of the Barrier are unable to access their farmland or grazing areas for their 10,000 animals west of the Barrier. In total, the Barrier has isolated 121,455 dunams of fertile Palestinian land. Of

the population of these districts affected by the Barrier thus far, 60% are completely dependent on agriculture for employment. The Barrier has also disabled an estimated 36 artisan wells and over 200 cisterns, the domestic and agricultural water source for 122,000 Palestinians.²²

Figure 4: Population at risk along Israeli Separation Barrier, Jenin, Tulkarem, and Qalqilya districts



Used by permission: Stop the Wall

The qualitative FAO Food Security Assessment's finding that 40% of the Palestinian population is currently food insecure appears to validate our use of employment level for food insecurity: combining both unemployment and underemployment (<20 hours per week) as an indicator of food insecurity, we found that 38.1% of Palestinian households were food insecure.

For the 50.8% of households having members with job losses since the onset of the *intifada* in October 2000, over three quarters of jobs lost were in the skilled labor

²² www.stophthewall.org/factsheets/63.shtml

categories of construction and factory work, high wage employment that has not been replaced. In all districts, between 63-96% of all jobs lost since 1 October 2000 were in the higher paying skilled labor sector. Table 21 shows the percentage distribution of households which have lost jobs since the *intifada* began, with Tulkarem, Nablus and Bethlehem districts particularly affected.

Table 21 : Percentage of households which have lost jobs in given sectors since 1 October 2000, by district			
District	n	%	Sectors*
West Bank			
Jenin	99	60.0	Skilled labor
Tubas	16	51.6	Skilled labor
Tulkarem	80	72.7	Skilled labor
Qalqilya	122	51.7	Skilled labor
Nablus	51	81.0	Skilled labor
Sulfit	17	40.5	Skilled labor
Ramallah	60	38.2	Skilled labor
Jericho	15	51.7	Skilled labor
Jerusalem	130	47.6	Skilled labor
Bethlehem	93	79.5	Skilled labor
Hebron	156	45.0	Skilled labor
Gaza Strip			
North Gaza	58	33.5	Skilled labor
Gaza City	155	49.7	Skilled labor
Deir al Balah	54	41.2	Skilled labor
Khan Yunis	84	50.6	Skilled labor
Rafah	75	55.1	Skilled labor
Total	1264	50.8	
n-2486			
*based on PCBS classifications			

Non-salary remittances over the last 6 months, including gifts and financial support, were more likely to come from within Palestine than from outside. In fact, only 2.3% of all households received remittances from abroad. This is consistent with previously published data from 2001 indicating that there have not been any significant increases in household remittances from abroad over the past two years.²³ During that time, of the 391 (15.7%) households receiving remittances from within Palestine:

- 5.4% reported increases;
- 41.2% reported decreases; and
- 53.4% remained the same.

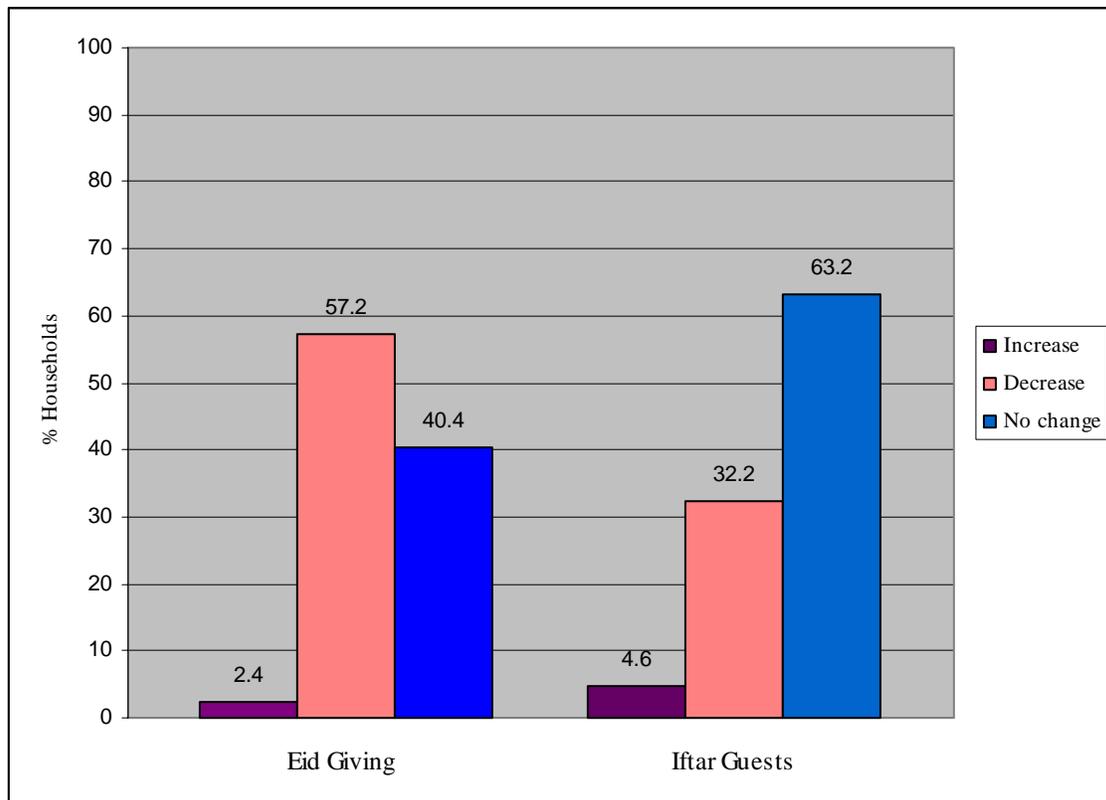
Of the 1,759 (70.8%) households having income from all sources of work whether formal or informal, the amount of monthly household income over the last six months:

²³ World Bank. Fifteen months—*intifada*, closures and Palestinian economic crisis: an assessment. March, 2002

- Increased in only 2.0% (35);
- Decreased in 53.9% (948); and
- Remained the same in 44.1% (776).

The degree to which a household will decrease spending at holidays may be an indicator of economic distress. Of the 2,168 households that regularly give gifts at the Eid holiday, 1240 (57.2%) decreased their spending from Eid 2002 compared with Eid 2003. (Both Eid holidays were held in February). Likewise, of the 1,571 households that regularly invited guests for the iftar dinner during Ramadan, 506 (32.3%) invited less friends and relatives to iftar during Ramadan 2002 compared to 2001 (Graph 2). Neither West Bank nor Gaza Strip households showed differences in this indicator.

Graph 2: Percentages of households with changes in holiday spending over one year



Coping Strategies

As members of a population are increasingly stressed in gaining access to food, they enlist a variety of predictable coping strategies in order to enhance their food access. Coping strategies used commonly by food insecure populations but *not* significant in the Palestinian population over the previous six months (January—July, 2003) included:

- Taking in non-household family members who are in need of food: in our sample this was a negligible amount;
- Having children work outside the home to bolster family income: only 0.5% of Palestinian households had children under 15 who worked outside the home to enhance family income; and
- Modifying the ability of children to attend school in order to preserve household income: of the 1850 households with children attending school, 1.7% had a change in their ability to attend school due to lack of money for tuition in either a public or private school.

Cutting back on household fuel consumption can be a coping strategy that may have consequences on the health of the household, particularly the very young and elderly who are more prone to respiratory infections. Gaza Strip and Jericho district residents rarely routinely use fuel during the winter months. Of the 1,067 households living in the colder districts of the West Bank and using fuel for heating, 33.0% (352) decreased the amount spent on fuel between the winters of 2001-2002 and 2002-2003, despite the fact that there was 1) no change in the mean temperature between the two years and thus no change in the need for heating and 2) there was no significant change in fuel costs per unit. Of those spending less on fuel, 65.6% (231) had less money to spend on fuel and 32.7% (115) opted to use cheaper alternative fuels such as wood. Other significant behaviors of household spending in order to buy food included:

- Not paying or paying less on utility bills to purchase food: 1,522 (62.5%) of 2,435 households who pay utility bills;
 - West Bank: 63.6%
 - Gaza Strip: 60.7%
- Not paying or paying less for children's clothes to purchase food: 1,414 (57.9%) of 2,441 households with children;
 - West Bank: 58.7%
 - Gaza Strip: 56.6%
- Foregoing buying medications for food: 339 (26.9%) of 1,259 households with members on medications for chronic diseases;
 - West Bank: 29.8%
 - Gaza Strip: 20.3%
- Not paying or paying less rent: 168 (33.0%) of 509 households who pay rent for shelter.

For this assessment, we examined salient coping strategies that have been validated by CARE in other settings of food insecurity.²⁴ We reasoned that a coping mechanism used at least one or more times per week constituted a variable of food insecurity (see discussion on food assistance and food security below). Table 22 highlights the most frequently used coping strategies by the Palestinian population over the course of the last six months (January—July, 2003).

²⁴ Maxwell D, Watkins B, Wheeler R, Sheikh D. The Coping Strategies Index: A tool for rapidly measuring food security and the impact of food aid programs in emergencies. CARE, September 2002.

<i>Table 22 : Percentage of Palestinian household coping mechanisms by frequency, January-July, 2003</i>						
Coping Mechanism	≥ Once per week		< Once per week		Never	
	WB	GS	WB	GS	WB	GS
Purchase food on credit	20.4	50.5	31.3	46.8	48.3	2.7
Rely on less preferred and less expensive foods (frozen, etc)	15.1	41.0	39.2	57.5	45.7	1.5
Generally decrease the amount of food consumed by the household	20.0	32.5	35.0	66.6	45.0	0.9
Restrict consumption of adults so children can eat	8.0	11.7	43.9	87.3	48.1	1.0
Reduced the number of meals eaten in a day	7.6	11.9	45.7	87.0	46.7	1.1
Limit portion sizes at mealtimes	6.7	8.7	45.9	90.0	47.4	1.3
Borrow food, or rely on help from friends or relatives (non-agency given food)	3.9	7.2	43.1	86.9	53.0	5.9

Six of the seven most common coping mechanisms used by the Palestinian population involve modifying the quantity and quality of food, although typical of less extreme food insecurity, often have long-term nutritional consequences. Purchasing on credit and borrowing food are short-term usually non-sustainable strategies also used frequently by this population.

Not surprisingly, Gaza households are using more coping strategies more frequently than West Bank households for two reasons. First, the level of underemployment (< 20 hours per week) as defined by the variable in Table 20 is significantly higher in Gaza (45.1%) compared to the West Bank (34.0%). In addition, average household size in Gaza is 8.2 persons per household compared to 6.6 persons per household in the West Bank.

Other coping behaviors that are used in extreme circumstances of food insecurity but not commonly employed by the Palestinian population deserve comment in the context of the *intifada*:

- Begin growing food at home:
 - West Bank households identified as those which do not always have money to buy food are more than twice as likely to grow food at home than those in Gaza (15.0% versus 6.3%);
- Kill farm animals the family owns for food:
 - Of the 423 West Bank households that owned edible farm animals, 6.9% have killed them for food on at least one occasion per week; of the 232 Gaza Strip households that owned edible farm animals, 5.2% have killed them for food on at least one occasion per week.

- Gather wild food for nourishment:
 - Over the six months preceding the assessment, 11.6% of households needed to gather wild foods to supplement their food supply; 3.2% of all Palestinian households used this strategy at least once a week, more commonly in the Gaza Strip (4.0%) than in the West Bank (2.7%) despite the fact that wild foods would be more available in the West Bank. This likely reinforces the general evidence of higher poverty levels in the Gaza Strip.
- Send household members to live elsewhere:
 - Between January and June 2003, 2.7% of all Palestinian households needed to send family members to live elsewhere because there wasn't enough food or money to provide food for the family.
- Skip entire days without eating:
 - Only 0.8% of all Palestinian households skip entire days without eating at least once a week; 3.0% of households had employed this strategy at some time between January and June, 2003.
- Visit relatives during mealtimes:
 - 2.1% of all Palestinian households visit relatives during mealtimes at least once per week when their own households don't have enough food
- Sell food ration from agencies:
 - Of the household population that receives supplemental food rations from various agencies (see "Food Assistance" below), 6.3% have sold their rations for other food or cash between January and June, 2003.

Over the last six months at least 27.0% of all Palestinian households have needed to sell non-productive assets such as jewelry, furniture, gold or other household items to purchase food; at least 12.1% have needed to sell productive assets such as livestock, land, vehicles, or other assets used to make a living to purchase food. These figures are consistent with food access surveillance of Palestinian households between May 2002 and August 2003.²⁵

Given the matrix of military checkpoints that systematically limit the movement of peoples between villages and cities; the intensive military incursions of heavy artillery in urban areas that disrupt activities of daily living; and the continuous 24 hour curfews that often keep the urban population confined to their homes for days and occasionally weeks at a time, humanitarians have raised the concern that the ability of the general population to physically access food markets has been a major concern. However, at the time this assessment was undertaken, there was a general ability to move within cities and towns. In fact, the inability to physically access markets was the cause of decreased food consumption in only 4.9% of households, and the presence of checkpoints in 3.8%. Clearly, economic factors play a far greater role in food insecurity than physical ones.

Rising food prices are often seen as ominous signs of increasing food insecurity. Since the beginning of the *intifada* in the fall of 2000 until the summer of 2002, the food

²⁵ JHU/AQU/Maram/CARE. Health Sector Bi-weekly Report #16, Aug 2003

consumer price index (FCPI) remained relatively constant. However, from July 2002 to August 2003 the FCPI increased 2.19% in the West Bank and 5.53% in the Gaza Strip.²⁶ In the West Bank, the Israeli military policy requiring back to back transfer of goods—unloading food trucks on one end of a checkpoint and carrying their cargo across to a waiting truck on the urban Palestinian side of a checkpoint—raised transportation costs in the West Bank (where checkpoints surround all urban areas) during the same period 4.10%. The added expense of doubling the number of trucks and drivers, not to mention the costs of overnight stays during periods of curfew and extra fuel for prolonged refrigeration directly contributed to the substantial increase.

Food Assistance

Currently, 46.8% of all Palestinian households—32.2% of West Bank and 71.8% of Gaza Strip households—receive food assistance from agencies, either in the form of direct food aid or by a cash/voucher/coupon system. Considerably less—10.1%—receive regular food assistance from friends or relatives. Of the 1164 households in our sample receiving food assistance from an agency:

- 809 (69.5%)—or 32.5% of the entire population—depend on food assistance for less than 25% of their total food budget;
- 238 (20.4%)—or 9.6% of the entire population—depend on food assistance for 25-49% of their total food budget;
- 97 (8.3%)—or 3.9% of the entire population—depend on food assistance for 50-74% of their total food budget; and
- 20 (1.7%)—or 0.8% of the entire population—depend on food assistance for 75-100% of their total food budget.

Food assistance constitutes a greater percentage of the household food budget in the Gaza Strip compared to the West Bank (Table 23), a finding consistent with the fact that Gaza households face a greater degree of household economic stress.

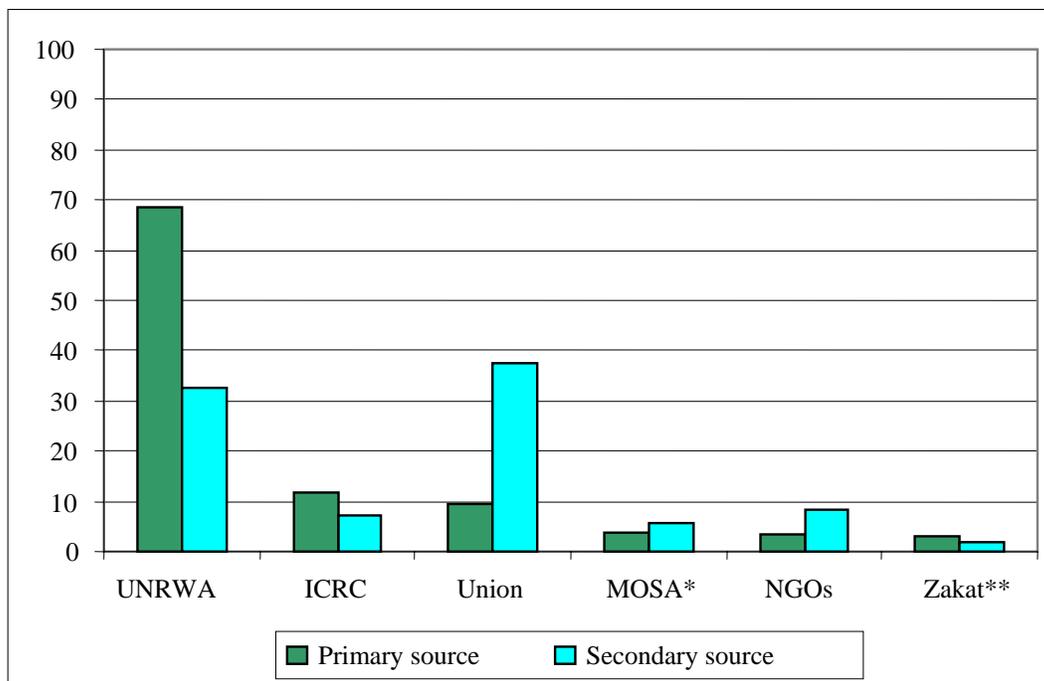
Table 23 : Food assistance as percentage of budget, Palestinian Territories

% of food budget	West Bank		Gaza Strip		Total	
	n	%	n	%	n	%
0 – 24	426	84.2	383	58.2	809	69.5
25 – 49	66	13.0	172	26.1	238	20.4
50 – 74	12	2.4	85	12.9	97	8.3
75 – 100	2	0.4	18	2.7	20	1.7
Total	506	100.0	658	100.0	1164	100.0

²⁶ www.pcbs.org

Agencies that serve as the main source of food assistance either through direct food aid or through coupons and vouchers are shown in Graph 3. The two main primary sources, UNRWA and ICRC, distribute on a frequency of *less than* once every two months to the majority of their beneficiaries (62.3% and 71.1% respectively). (Note that the ICRC has recently discontinued its food voucher program in the urban West Bank since this data was obtained). Most of the beneficiary population receives their food not more frequently than every two months. None of the primary food aid sources have changed their frequencies of distribution between January and July, 2003. In general, the amount of food assistance does not vary with household size.

Graph 3: Primary and secondary sources of food aid of households receiving food assistance, Palestinian Territories, 2003



* Ministry of Social Affairs; **Islamic charitable committees

In order to answer the question of whether food assistance is well-targeted across the population, we cross-tabulated variables of both employment level and coping strategies (generated in Tables 20 and 22 above respectively) with those households receiving food assistance. In the matrices that follow, the cross-tabulations reflect the degree to which food assistance reaches those most at risk. For each matrix, the sample distribution of 1,570 West Bank and 916 Gaza Strip households applies and represents the time period January – June, 2003. Highlighted boxes in the matrices represent those households most at risk for food insecurity: in other words, those households with limited income from employment and not receiving food assistance or households frequently utilizing coping strategies and *not* receiving food assistance.

For instance, in the Level of Employment matrix, of the West Bank households with limited or no income (working less than 20 hours per week), 52.8% currently do not receive food assistance; for Gaza Strip households with limited or no income, 26.6% do not currently receive food assistance. This perspective identifies those populations *potentially at risk currently*.

Indicator: Level of Employment		West Bank		Gaza Strip	
		<20 h/w %	≥20 h/w %	<20 h/w %	≥20 h/w %
Receive Food Assistance	Yes	47.2	24.5	73.4	70.6
	No	52.8	75.5	26.6	29.4
Total		100.0	100.0	100.0	100.0

If instead, the question is whether food assistance has been targeted to populations at risk, then one must look at the matrix horizontally. For instance, of all the West Bank households not receiving food assistance, 26.5% have limited or no employment income; for the Gaza Strip households not receiving assistance, 42.6% have limited or no employment. Alternatively, of those West Bank and Gaza Strip households who *are* receiving food assistance, roughly half are under or unemployed and half have part-time or full employment income.

Indicator: Level of Employment		West Bank		Total WB	Gaza Strip		Total GS
		<20 h/w %	≥20 h/w %		<20 h/w %	≥20 h/w %	
Receive Food Assistance	Yes	49.8	50.2	100.0	46.0	54.0	100.0
	No	26.5	73.5	100.0	42.6	57.4	100.0

Likewise, food assistance and coping mechanisms can be viewed from these two perspectives, i.e. identifying those households currently at risk as defined by frequency of using coping mechanisms and whether or not they may be receiving food assistance and those households already receiving food assistance and whether that assistance is targeted to the degree a given coping mechanism is utilized.

For instance, of West Bank households deemed more food insecure by virtue of the fact that they decrease the amount of food the household consumes more than once per week, nearly 70% of these are not receiving food assistance; less food insecure Gaza households (nearly 20%) are not receiving food aid.

Coping Mechanism: Decrease amount of food household consumes		West Bank			Gaza Strip		
		≥once/wk %	<once/wk %	never %	≥once/wk %	<once/wk %	never %
Receive Food Assistance	Yes	30.3	28.5	36.0	80.2	67.7	*
	No	69.7	71.5	64.0	19.8	32.3	*
Total		100.0	100.0	100.0	100.0	100.0	100.0

* numbers too small for interpretation

Of those *not* already receiving food assistance in the West Bank and Gaza Strip, roughly a fifth frequently use diminishing the amount of household food consumption as a coping strategy indicating that targeting has been about 80% accurate for this population. Significantly, of those who are receiving assistance nearly a fifth in the West Bank and over a third in the Gaza Strip are still using this coping mechanism despite the fact that they receive assistance—an indication that perhaps for this subgroup the assistance is not adequate.

Coping Mechanism: Decrease amount of food household consumes		West Bank			Total WB	Gaza Strip			Total GS
		≥once/wk %	<once/wk %	never %		≥once/wk %	<once/wk %	never %	
Receive Food Assistance	Yes	18.8	31.0	50.2	100.0	36.3	62.8	0.9	100.0
	No	20.6	36.9	42.5	100.0	22.9	76.4	0.8	100.0

The next two matrices represent the commonly used coping mechanism of purchasing food on credit. We already know that a sizeable proportion of both the West Bank and Gaza Strip populations use this as a coping mechanism from Table 22 above. Defining those at risk of food insecurity being those households which buy on credit more than once per week, two thirds of such West Bank households do not receive food assistance; less than one fourth of the food insecure in Gaza, defined by frequent buying on credit, are not receiving food assistance.

Coping Mechanism: Purchase food on credit		West Bank			Gaza Strip		
		≥once/wk %	<once/wk %	never %	≥once/wk %	<once/wk %	never %
Receive Food Assistance	Yes	32.5	26.5	35.8	76.9	67.1	*
	No	67.5	73.5	64.2	23.1	32.9	*
Total		100.0	100.0	100.0	100.0	100.0	100.0

* numbers too small for interpretation

However, of the population not receiving food assistance, one fifth and over 40% of the West Bank and Gaza Strip respective households are still frequently buying food on credit. Of note, over half of the West Bank households who are receiving food aid are not running up credit for food indicating that either food assistance has benefited this group over the six month period or, *more likely*, that the food aid has not been well targeted in the West Bank. In Gaza, targeting is more accurate in that almost all of the households receiving assistance are those who have run up credit for food to some degree in the six month period. Nonetheless, a significant population exists who do not receive food aid and yet heavily depend on credit for food.

Coping Mechanism: Purchase food on credit		West Bank			Total WB	Gaza Strip			Total GS
		≥once/wk %	<once/wk %	never %		≥once/wk %	<once/wk %	never %	
Receive Food Assistance	Yes	20.6	25.7	53.8	100.0	54.1	43.8	2.1	100.0
	No	20.3	33.9	45.8	100.0	41.5	54.7	3.9	100.0

The coping mechanism that has direct impact on the quality of food intake and thus macro and micronutrient nutritional status is that of dropping higher priced proteins and nutrient rich foods from the diet, particularly meats, fish, poultry, eggs, fruits, and milk. As noted with the West Bank households frequently using the previous two coping mechanisms, a high proportion (two-thirds) of households eating less preferred and less expensive foods to ensure food security for themselves do not receive food assistance. Gaza households who utilize this coping mechanism, on the other hand, are more likely to have food assistance.

Coping Mechanism: Eat less preferred / less expensive foods		West Bank			Gaza Strip		
		≥once/wk %	<once/wk %	never %	≥once/wk %	<once/wk %	never %
Receive Food Assistance	Yes	31.9	26.5	35.8	80.2	67.7	*
	No	67.5	73.5	64.2	19.8	32.3	*
Total		100.0	100.0	100.0	100.0	100.0	100.0

* numbers too small for interpretation

Consistent with the trends of populations receiving food aid, West Bank households on food aid are more likely to not be deferring eating preferred, higher priced protein-rich foods as compared to Gaza households indicating that targeting in Gaza is better and more appropriate than in the West Bank. And, as noted above in Gaza populations *not*

receiving food aid, over one-third are frequently deferring preferred nutrient-rich foods, not surprisingly nearly the same amount with limited or no income and not receiving food assistance (see Level of Employment matrix above).

Coping Mechanism: Eat less preferred / less expensive foods		West Bank			Total WB	Gaza Strip			Total GS
		≥once/wk %	<once/wk %	never %		≥once/wk %	<once/wk %	never %	
Receive Food Assistance	Yes	15.0	34.2	50.8	100.0	43.6	54.7	1.7	100.0
	No	15.2	41.6	43.1	100.0	34.5	64.7	0.8	100.0

Understanding that the above matrices represent both populations that currently use coping mechanisms to greater or lesser degree as well as those who have received food assistance between January and June, 2003, we can make several observations based on patterns that emerge:

- In general, a disproportionate number of West Bank households who frequently depend on coping mechanisms for food security *do not* receive food assistance compared to Gaza Strip households;
- Food assistance has not been well targeted to West Bank households as compared to Gaza households by virtue of the degree to which non-food assisted households frequently use coping mechanisms to ensure food security;

A significant proportion of Gaza and a not insignificant proportion of West Bank households who do not receive food assistance are still food insecure as defined by level of employment and frequency of coping mechanism use.

D. Food Security and Nutrition Linkages

In light of the above quantitative analyses on food security and nutritional status, we sought to relate factors of food insecurity with the prevalence of GAM and GCM, specifically the variables of level of employment, the coping strategy of decreased food consumption, and the pattern of food assistance.

Preschool age children in households with wage earners working less than 20 hours per week—the underemployed or unemployed—were statistically more likely to be both acutely and chronically malnourished than those in households with part-time or full-time employment (Tables 24 and 25).

Table 24 : Households of children with acute malnutrition by household employment

GAM ($< -2Z$)	Level of Employment				Total
	<20 hrs/wk		≥ 20 hrs/wk		
	n	%	n	%	
Yes	33*	4.1	30*	2.3	63
No	769	95.9	1249	97.7	2018
Total	802	100.0	1279	100.0	2081

* $\chi^2 = 5.25$, $p \leq 0.025$, $df = 1$

Table 25 : Households of children with acute malnutrition by household employment

GCM ($< -2Z$)	Level of Employment				Total
	<20 hrs/wk		≥ 20 hrs/wk		
	n	%	n	%	
Yes	147*	18.3	155*	12.1	302
No	655	81.7	1124	87.9	1779
Total	802	100.0	1279	100.0	2081

* $\chi^2 = 15.3$, $p \leq 0.001$, $df = 1$

Households that frequently used the coping mechanism of decreasing amount of household food consumption were not statistically likely to have an acutely malnourished child at the time of the assessment (Table 26). However, they were more likely to have a severe or moderate chronically malnourished child, a difference that was statistically significant (Table 27). This would make sense if a household is in a perpetual state of decreasing its food consumption.

Table 26 : Households of children with acute malnutrition by decreased amount of household food consumption

GAM ($< -2Z$)	Frequency					
	\geq once/wk		$<$ once/wk		never	
	n	%	n	%	n	%
Yes	17	3.2	7	4.1	39	2.9
No	507	96.8	165	95.9	1346	97.3
Total	524	100.0	172	100.0	1385	100.0

<i>Table 27 : Households of children with chronic malnutrition by decreased amount of household food consumption</i>						
GCM ($< -2Z$)	Frequency					
	\geqonce/wk		$<$once/wk		never	
	n	%	n	%	n	%
Yes	94*	17.9	25	14.5	183*	13.2
No	430	82.1	147	85.5	1202	86.8
Total	524	100.0	172	100.0	1385	100.0
* $\chi^2 = 6.84, p \leq 0.05, df = 2$						

Although level of employment and the frequency with which households used decreasing food consumption were both associated with global chronic malnutrition, the presence or absence of food assistance to a household was not statistically related to whether there was an acutely or chronically malnourished child in the household (Tables 28 and 29). There was, however, a trend for both GAM and GCM to occur in households receiving food assistance.

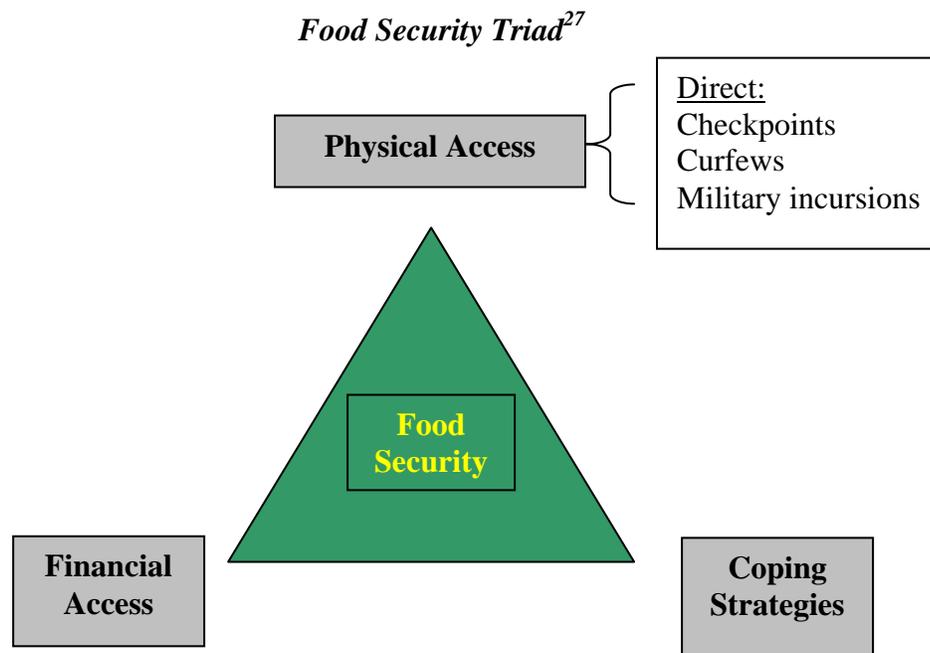
<i>Table 28 : Households of children with acute malnutrition by food assistance</i>					
GAM ($< -2Z$)	Food Assistance				Total
	Yes		No		
	n	%	n	%	
Yes	34	3.4	29	2.7	63
No	962	96.6	1056	97.3	2018
Total	996	100.0	1085	100.0	2081

<i>Table 29 : Households of children with chronic malnutrition by food assistance</i>					
GCM ($< -2Z$)	Food Assistance				Total
	Yes		No		
	n	%	n	%	
Yes	160	16.1	142	13.1	302
No	836	83.9	943	86.9	1779
Total	996	100.0	1085	100.0	2081

This further highlights the notion that food assistance may not be adequately targeted to the most vulnerable households.

Conclusions

A household's ability to provide food for its members—food security—is determined by physical access, financial access, and its use of coping strategies. Changes in any of these factors may adversely affect food security. From 2002 to 2003, the degree of physical access improved as households that utilized coping strategies such as decreasing their daily consumption of food did so due to *economic reasons* rather than as a result of the physical barriers of the curfews and checkpoints. That said, checkpoints, roadblocks, and curfews still indirectly affect access to food through their direct effect on the Palestinian economy.



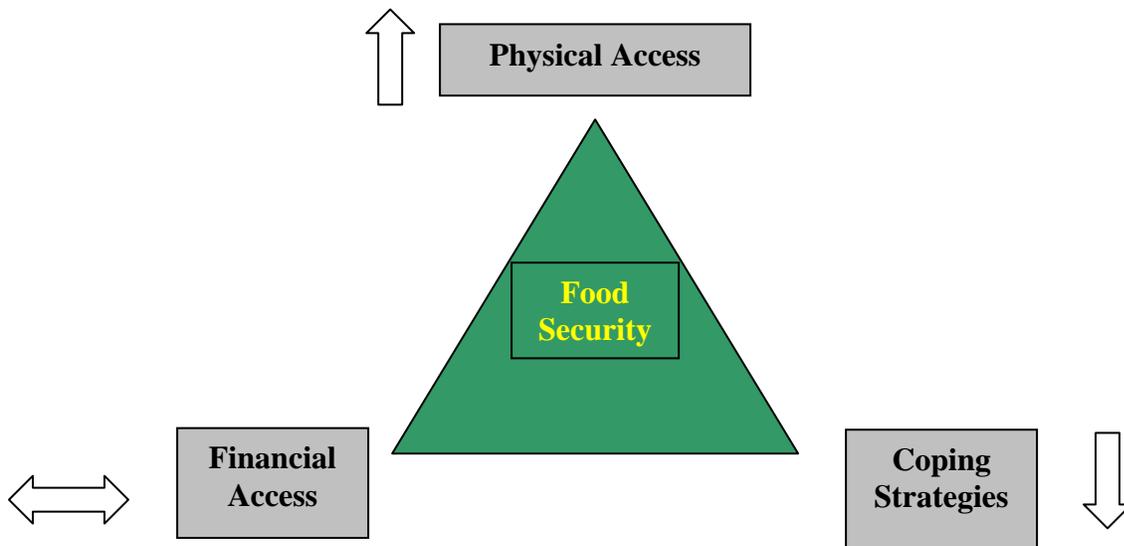
Inability to physically access food has an immediate, and in the case of periodic curfews, and closed checkpoints and border crossings, shorter term affect on a household's food security and nutrition. Such was the case in the Palestinian Territories, particularly the West Bank, during the spring and summer of 2002.

²⁷ Adapted from Abdeen, Z, Nutrition and Health Research Institute, Al Quds University

Financial access, in the absence of food assistance, progressively worsened from 2002 to 2003 and our choice of economic indicator—level of employment—illustrates on some level the degree to which Palestinian households are economically stressed. Over half of households have experienced a decrease in monthly household income over the last six months and for nearly half a decrease in non-salary remittances. Families are experiencing a moderate degree of economic distress as evidenced by the fact that they are spending less at holidays, and inviting less people for iftar dinner. The latter may be quite significant since adding extra people for dinner is not much of an additional expense. Households are foregoing use of fuel or using alternative sources due to costs. In order to buy food, over 60% of households either pay less or forego paying bills, and nearly that many buy fewer clothes for their children. The level of food assistance buffers the general worsening of household economy seen over the year and is thus reflected in the diagram below.

Financial access to food has a longer-term affect on food access than physical access simply because economic distress is not easily remedied or reversed. Thus *lack of physical access* is likely to precipitate *acute malnutrition*; *lack of financial access* is more likely to lead to *chronic malnutrition*. Not surprisingly then, the anthropometric findings in 2003 can readily be interpreted by the fact that food insecurity leading to malnutrition is more a function of economic causes than physical causes, as illustrated in the diagram below. Coping strategies are more likely to affect micronutrient deficiencies. The increased use of coping strategies and their eventual exhaustion over time means that households cannot afford micronutrient rich foods. Predictably, in 2003, we see a disturbing decline in both macro (energy and protein intake) and micronutrient (vitamins A, E, folate and minerals iron and zinc) indicators.

Changes in food access 2003 relative to 2002



Food Security and Food Assistance

Over half (53.9%) of the surveyed households have had decreases in household income over the previous six months. As a result, households have used such income preserving strategies as:

- Decreasing Eid spending in 2003 compared with 2002 (57.2%);
- Decreasing the number of guests for *iftar* dinner (32.3%); and
- In the West Bank, 33.0% decreased amount of money spent on fuel between 2002 and 2003.

In order to buy food, Palestinian households:

- Did not pay or underpaid utility bills (62.5%);
- Did not buy or bought fewer clothes for their children (57.9%);
- Neglected to buy medications for chronic diseases (26.9%);
- Did not pay or underpaid their rent (33.0%)

Creating a variable of underemployment—total household employment time of less than 20 hours a week and/or unemployment—we found that 38.1% of Palestinian households (35.0% West Bank; 45.1% Gaza Strip) were in this category and thus deemed to be at risk for food insecurity. Coping strategies most frequently used in order of descending importance included purchasing food on credit; relying on less preferred and less expensive foods; decreasing the amount of food consumed by the household; restricting the consumption of the adults in the households for the benefit of the children; reducing the number of meals per day; limiting portion sizes; and borrowing food or relying on friends and relatives (not including humanitarian assistance or UNRWA food). Gaza Strip households tended to invoke these strategies more often which we believe directly relates to their greater degree of household economic distress relative to the West Bank.

Frequency of utilizing coping strategies was also quantified as a variable of food insecurity and together with the underemployment variable was used to evaluate whether food assistance was well targeted. There is an increasing dependency on food assistance. As of August 2003, 46.8% of all Palestinian households—32.2% of West Bank and 71.8% of Gaza Strip households—received food assistance from either UNRWA, WFP (through NGOs), ICRC, charitable humanitarian agencies, or some combination of these. By cross-tabulating the variables of underemployment and frequency of household utilization coping strategies we found:

- In terms of food assistance over the six months prior to the survey, sizeable proportions of Gaza and West Bank households not receiving food assistance are eligible by virtue of their employment levels and frequency of coping mechanisms;
- In terms of low employment status and frequency of coping mechanisms, a disproportionate number of West Bank households (over half with

- underemployment and over two-thirds with frequent coping mechanism usage) currently *do not* receive food assistance compared to Gaza Strip households; and
- There is a clear need for better targeted food assistance. Our data suggests that regardless of the agency providing food assistance, either direct or through vouchers, there is in general a “shotgun” approach to delivering food aid and that neither the economic indicator of employment level nor the degree of household coping strategy utilization consistently predicts whether a household at risk for food insecurity receives food assistance.

Malnutrition and Food Consumption

In general, there has been a meaningful improvement in anthropometric indicators among preschool age children from the summer of 2002 to the summer of 2003. The aggressive and timely food assistance interventions that began in mid-2002 and that have remained sustained to the present have had the following effects:

- GAM, a short-term and reversible indicator, has been mitigated in the new cohort of children studied in mid-2003 for both the West Bank and Gaza Strip;
- GCM, a long-term indicator, improved in the Gaza Strip where concentrated food assistance prevented high numbers of acutely malnourished in 2002 from becoming chronically malnourished in 2003; and
- GCM in the West Bank has shown an increase, that, although not statistically significant, may indicate the economic effects on the West Bank and the relatively less attention to food assistance paid to the West Bank compared to the Gaza Strip are beginning to take a toll on the most vulnerable.

However, the continuing economic decline and increase in the use of coping strategies elaborated above has taken a toll on the quality of nutrition among Palestinian preschool age children from 2002 to 2003. Over the course of the year daily median intakes of essential macro and micronutrients have decreased:

- Energy—8.3% for 1-3 year olds, 13.2% for 4-5 year olds;
- Protein—10.8% for 1-3 year olds, 16.7% for 4-5 year olds;
- Vitamin A—23.6% for 1-3 year olds, 19.9% for 4-5 year olds;
- Vitamin E—10.5% for 1-3 year olds, 23.0% for 4-5 year olds;
- Folate—11.3% for 1-3 year olds, 18.9% for 4-5 year olds;
- Iron—0.0% for 1-3 year olds, 15.0% for 4-5 year olds; and
- Zinc—11.6% for 1-3 year olds, 18.4% for 4-5 year olds.

Large segments of the preschool age children are eating below the 80% level for each of these nutrients, by definition, a state of high prevalence for deficiency. Of note were other points of concern:

- The unprecedented finding that older children in the sample are taking in less calories per day than younger children—this reflects a disturbing coping strategy within a household and highlights a greater level of food insecurity than in 2002;

- In general, children living in Gaza had a higher prevalence of macro and micronutrient deficiencies compared to West Bank children—further evidence to support the theory that the more frequently households use the coping strategies (as is the case in Gaza), the more likely the presence of nutritional deficiencies; and
- Due to a shortage of funds in UNRWA’s food aid program during the final quarter of 2003, West Bank food parcels normally for two person households were now going to three person households, cutting the nutritional value of the parcels from the routine 60% coverage of nutritional requirements per person down to 40%.²⁸

Recommendations

In the relatively short era within which complex humanitarian emergencies have been defined, studied, and managed, the primary effects of conflict on the physical and financial availability of food and their subsequent effects on the public’s health when that access is denied has grown significantly. We hope to add to that body of knowledge with this assessment in conjunction with the FAO qualitative assessment just released. The fact that nutritional issues are even a concern in a place where food is readily available in the marketplace and where the infrastructure to grow, refrigerate, preserve, transport, and market goods exists point to a fundamental need to hold the various parties involved in the conflict accountable for ensuring physical *and economic* access to food for the non-combatant population as prescribed in international humanitarian law. The Palestinian Territories are not third-world societies yet. As the Palestinian economy continues to dwindle, however, the humanitarian community independent of the Israeli government has had to (and will likely have to) increase its response in order to prevent the specter of acute malnutrition from crossing the threshold of crisis. In so doing, humanitarian agencies remain in the difficult position of maintaining a tenuous level of nutritional assistance. Our assessment demonstrates that tenuousness—clearly that segment of the population in economic distress and higher levels of food insecurity are more in danger of becoming acutely or chronically malnourished in a relatively short period of time and require constant vigilance. In addition, the population as a whole suffers from the inability to financially access sufficient amounts of nutrient appropriate foods. Thus, governmental policy should guarantee and facilitate financial and physical access to food and provide support and coordination to the ongoing humanitarian agencies that perform that work in daily practice.

General

Stakeholders—donors, national and international NGOs, and research institutions—should work within the framework of the Palestinian National Nutritional Strategy

²⁸ www.un.org/unrwa/emergency/prog-report/report23.pdf

developed in 2003 by the Palestinian Ministry of Health for focused interventions. Likewise, the MOH should take the lead in coordinating various donors and NGOs in all areas including gathering and monitoring data that guides interventions. Aside from the more obvious benefits of coordination, particularly between large scale food assistance operations, the MOH in its role can oversee the more delicate task of ensuring macro and micronutrient deficiencies are adequately addressed.

Malnutrition and Food Consumption: Prevention

MOH should ensure the standardization of nutritional indicators and the protocols for nutritional deficiency management across all providers. UNRWA clinics currently measure weight for age; MOH clinics measure weight for height; NGOs may use a combination. How cases of acute and chronic malnutrition should be identified, treated, and referred across the spectrum of health providers and facilities require a uniform approach. A well publicized strategy that includes donors, NGOs and local health providers and that ensures continuity of nutritional care between antenatal clinics, postnatal clinics, sick children clinics, primary care clinics, and social services would address the cases of undernutrition that frequently get missed. (Our clinic survey of 2002 revealed that only 60% of preschool age children have adequate anthropometry; of those who do and are found to be malnourished, 40% are missed by the providers).²⁹ Further, a means of clinic-based nutritional monitoring needs to occur beyond that which occurs at routine clinic visits (anthropometric measurements usually take place at the time of immunization which for most children is rarely beyond 15 months of age).³⁰ Our data and that of the USAID vitamin A study suggests that children in the 3-5 year age range are at risk of macro and micronutrient deficiencies—this group is not captured well either for surveillance or intervention since they are less likely to be presenting to clinics for routine primary care.

Much has been discussed regarding nutritional surveillance and a sentinel mechanism as a part of an early warning system for acute malnutrition and for monitoring malnutrition—yet nothing to date has been organized. Either a household or clinic based approach would be beneficial although the latter is certainly more feasible and easier to establish. A network of UNRWA, MOH, and NGO clinics in each district and in critical access areas (villages at risk from the Separation Barrier, villages surrounded by settlements, zones of high poverty) could be easily identified and a database developed. Monthly nutritional input could be collated and sent to the two Health Information Centers in Nablus and Gaza City, analyzed, interpreted, and disseminated to key stakeholders. Anthropometric data can also function as indicators of household food security and add to FAO's Food Insecurity and Vulnerability Information and Mapping System proposed for the Palestinian Territories.

²⁹ Al Quds University/Johns Hopkins University/CARE. The Nutritional Assessment of the West Bank and Gaza Strip, Sept 2002

³⁰ USAID/Maram Project. Nutrition Programs: Challenges and Opportunities Conference, Amman, Jordan, January 2004.

The easily reversible nature of acute malnutrition makes a preventive approach more preferable. This assessment would argue that in addition to anthropometric monitoring, periodic 24 energy assessments should be followed to monitor median daily kilocalorie intake on vulnerable groups over time. In the face of ongoing deterioration in the Palestinian economy and the increasing level of household food insecurity further decline in the nutritional status of young children is inevitable.

Malnutrition and Food Consumption: Interventions:

Monitoring mechanisms should ideally be in place prior to specific interventions in order to evaluate their effectiveness and cost-benefits sufficiently. Interventions should be evidence-based where possible. For instance, population-based strategies such as fortification of common foods, which though cost-effective, require significant start-up costs, should thus be supported by population studies that demonstrate its efficacy. For example, no population-based study to date has examined the benefit of iron fortification of flour in a Middle Eastern population.

A variety of food interventions are already in varying stages of development and implementation. We have elaborated on the range of macro and micronutrient strategies, specifically interventions for iron deficiency anemia in the Recommendations section of our Nutritional Assessment of 2002.³¹ Fortification remains the most likely effective population-based approach since we can conclude the population is eating well below RDA levels for all micronutrients. Past experience with the 24 hour recall method has demonstrated that the Palestinian diet has little day to day variability thus making the fortification intervention easier to monitor. Wheat flour and oil remain the most viable candidates as fortification vehicles in the Palestinian population. Iron, B-complex vitamins, and folate can be added to flour; vitamin A to oil. Cereals, juices, milk, and margarine are expensive for most households to purchase and for that reason less useful as fortification vehicles.

Multiple vitamin supplementation programs have many forms—usually clinic or school-based. Whatever form they take, a concurrent educational emphasis on nutrient appropriate foods and the significance of micronutrient supplementation should be in place, for children but especially for mothers.

Fortification and supplementation strategies, although cost-effective in the long-term compared to the ultimate cost to society, do require what some donor agencies and NGOs may feel are prohibitive start-up costs; such organizations may be less inclined to embark on such ambitious interventions. Fortification in particular has high start-up costs and requires ongoing quality assurance. Ideally foods can be fortified in-country rather than imported and it is particularly in this area that technical expertise from the Israeli

³¹ Al Quds University/Johns Hopkins University/CARE. The Nutritional Assessment of the West Bank and Gaza Strip, Sept 2002.

Ministry of Health and the World Health Organization's Eastern Mediterranean Office could be supportive.

Food Insecurity: Food Assistance

The current level of food assistance is not sustainable; already we have seen evidence of donor fatigue (the unfilled appeals of UNRWA and WFP) and a sense of exasperation on the part of the international community that if it were not for their efforts, the Palestinian population would slowly starve. Given that roughly two-thirds of the Palestinian Authority's revenues come from donor governments, the Palestinian economy is quickly becoming a humanitarian one.³² ICRC has opted to end their voucher program in the West Bank. However, the fact that children's daily micro and macronutrient intake continues to fall—and even more alarmingly that as preschool age children age their intake decreases in median daily calorie intake—argues for continued and sustained food assistance, albeit with a more targeted approach. Certainly this can take a number of forms:

- Bulk food assistance. Our data indicates that such assistance needs better targeting, particularly those identified as food insecure by economic and coping indicators. New attention needs to be given to vulnerable West Bank populations as median household incomes drop and the Barrier nears completion. Massive food distribution is not indicated or warranted since that would decrease prices and discourage producers.
- Targeted food subsidies and price controls. While food baskets may ease the economic difficulty for the most food insecure, the population in general may benefit from subsidies that allow them to eat nutrient rich foods since micronutrient intake is universally deficient. Such an approach would encourage producers of meat, fish, dairy, fruits, and vegetables to keep producing knowing that a market could in fact exist for their products; this potentially could reverse the general trend of decreased agricultural production seen in 2003.
- Job creation programs and food/cash for work programs certainly boost financial access to food; in order for these to succeed, however, the population needs to have physical access to markets ensured.

A food security early warning mechanism would be especially useful as closures and the Separation Barrier begins to severely limit access between production areas and markets.

Most significantly, the issue of access to nutritional food that mitigates the risks of acute malnutrition and macro and micronutrient deficiencies *is primarily an economic one* and secondarily a physical one and in the context of the Israeli-Palestinian conflict *ultimately requires a political solution*.

³² World Bank. Twenty-seven months—*intifada*, closures, and Palestinian economic crisis. May, 2003

Annexes

Annex 1: Associated Tables of Interest

Table A-1 : Frequency and prevalence of global acute and chronic malnutrition, children ages 6-59 months by territory and locale

Territory and Locale	N	Global Acute Malnutrition (Weight/Height)		Global Chronic Malnutrition (Height/Age)	
		n < -2Z	% < -2Z	n < -2Z	% < -2Z
		West Bank	1767	54	3.1
Urban	781	18	2.3	63	8.1
Non-Urban	868	32	3.7	86	9.9
Camp	118	4	3.4	14	11.9
Gaza Strip	1322	52	3.9	168	12.7
Urban	707	27	3.8	87	12.3
Non-Urban	123	1	0.8	14	11.4
Camp	492	24	4.9	67	13.6
Total	3089	106	3.4	331	10.7

Table A-2 : Frequency and prevalence of global acute and chronic malnutrition, children ages 6-59 months by district

Territory and Locale	N	Global Acute Malnutrition (Weight/Height)		Global Chronic Malnutrition (Height/Age)	
		n < -2Z	% < -2Z	n < -2Z	% < -2Z
		West Bank	1767	54	3.1
Jenin	191	5	2.6	18	9.4
Toubas	41	1	2.4	5	12.2
Tulkarem	131	2	1.5	16	12.2
Qalqilya	75	6	8.0	8	10.7
Nablus	270	5	1.9	33	12.2
Sulfit	56	1	1.8	3	5.4
Ramallah	133	5	3.8	15	11.3
Jerusalem	344	12	3.5	23	6.7
Jericho	38	0	0.0	2	5.3
Bethlehem	102	6	5.9	8	7.8
Hebron	386	11	2.8	32	8.3
Gaza Strip	1322	52	3.9	168	12.7
North Gaza	253	7	2.8	22	8.7
Gaza City	480	13	2.7	80	16.7
Deir al Balah	198	11	5.6	30	15.2
Khan Yunis	176	10	5.1	21	11.9
Rafah	215	11	3.4	15	7.0
Total	3089	106	3.4	331	10.7

<i>Table A-3 : Frequency and prevalence of global acute and chronic malnutrition, children ages 6-59 months by territory and gender</i>					
Territory and Locale	N	Global Acute Malnutrition (Weight/Height)		Global Chronic Malnutrition (Height/Age)	
		n < -2Z	% < -2Z	n < -2Z	% < -2Z
West Bank	1767	54	3.1	163	9.2
Male	912	30	3.3	89	9.8
Female	855	24	2.8	74	8.7
Gaza Strip	1322	52	3.9	168	12.7
Male	676	27	4.0	89	13.2
Female	646	25	3.9	79	12.2
Total	3089	106	3.4	331	10.7

<i>Table A-4 : Distribution of household sample by district</i>			
District	n	Monthly income decrease n	Monthly income decrease %
West Bank	1570		
Jenin	165	84	50.9
Tubas	31	12	38.7
Tulkarem	110	82	74.5
Nablus	236	137	58.1
Qalqilya	63	25	39.7
Sulfit	42	7	16.7
Ramallah	157	55	35.0
Jericho	29	16	55.2
Jerusalem	273	145	53.1
Bethlehem	117	56	47.9
Hebron	347	60	17.3
Gaza Strip	916		
North Gaza	173	27	15.6
Gaza City	312	79	25.3
Deir al Balah	131	21	16.0
Khan Younis	164	51	31.1
Rafah	136	91	66.9
Total	2486	948	53.9

Annex 2: Food Security and Nutritional Assessment Household Questionnaire

File No.

District: _____

Locality: _____

1. Urban 2. Non-Urban 3. Camp

Name of Head of Household: _____

Phone: _____

Name of Interviewee: _____

Sex of Interviewee: Male

Female

Interviewer _____

Code

GPS Data: Latitude: _ . _ . _ . _ . _ . _ . Longitude: _ . _ . _ . _ . _ . _ .

Report of Interview

Date of Interview: __/__/__

Day of Interview: 1 2 3 4 5 6 7

Time Started ____: ____

Time Finished ____: ____

Change of Address? Yes No

If yes, what is new address: _____

Table of Visits	Date
First visit	____/____/____
Second visit	____/____/____
Third visit	____/____/____

INFORMED CONSENT

Hello, my name is _____ and I am working with Al Quds University. We would very much appreciate your participation in this survey. This survey will provide important information for the Ministry of Health and international agencies to plan for food assistance. I would like to ask you about nutrition, the nutrition of your children, and how well the family is able to access food for good nutrition. I would also like to measure the weight and height of your children between 6 months and 5 years of age. The survey usually takes 30-45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since we believe your views are extremely important to assist your family and village/city.

At this time, do you want to ask me anything about the survey? Y N

May I begin the interview now? Y N

Signature of interviewee: _____ Date: _____

Respondent(s) agree (s) to be interviewed: Y N

Part 1: Household Demographic

1. Head of Household: Male Female **If head of household is male go to question No. 3**

2. If female head of household, what is marital status?

1. Single, not divorced	2. Divorced	3. Widowed	4. Married, husband not living with family
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3. Refugee Status: Yes No

4. **Level of education (highest level achieved):**

• **Head of household**

1. Illiterate	2. Primary	3. Secondary
4. High School	5. Diploma	6. Bachelor
7. Post-graduate		

• **Mother**

1. Illiterate	2. Primary	3. Secondary
4. High School	5. Diploma	6. Bachelor
7. Post-graduate		

5. Who are the persons who reside permanently in this household?

Person Number	Name	Relation to Head 1-Household Head 2- Spouse 3- Son/Daughter 4-Parent 5-Sibling 6- Grandparent 7- Grandchild 8- Son/Daughter in law 9- Other Relative 10- Other	Sex	Date of Birth
			1.Male 2.Female	Day/Month/Year
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

If there are more members please write on the back of the page

6. Are any of these members chronically ill or disabled?

1. Yes 2. No

If yes, How many	Their ages			

Those disabled and aged over 15: are they able to work?

1. Yes 2. No

7. Has the household changed in size over the last year?

1. Increased

1-1 Due to birth in family

1-2 Including extended family that could not afford to live independently

1-3 Other _____

2. Decreased

2-1 Death in the family

2-2 Older children move out to attend school or marry

2-3 Children sent to live with relatives to ease financial pressure on the family

2-4 Children sent to live with relatives for other reasons

2-5 Other _____

3. Remained the same

Part 2: Household Income and Spending

8. How many household members are working regularly outside the home? _____

Number of hours	Number of members
More than 35 hours per week	
20-34 hours per week	
Less than 20 hours per week	

9. Are there people in this household who have lost their jobs since 1/10/2000, i.e. since the beginning of the Intifada?

1. Yes 2. No **If no go to question no. 11**

If yes, in which sector were they mainly employed? _____

10. Have job opportunities changed compared to last year?

1. Yes 2. No

11. For male interviewees: What is the current daily rate of payment for part-time casual labor for an average able bodied man in your area? _____ NIS

12. For female interviewees: What is the current daily rate of payment for part-time casual labor for an average able bodied woman in your area? _____ NIS

13. Are any of the children less than 15 years of age working outside the home for pay?
 1. Yes 2. No

If Yes, how many?	Their Ages			

14. Do you possess the following items (Count all functioning items):

Item	Number of Items
TV	
Car	
Mobile phone	
Refrigerator	

15. Do you pay rent for the place in which you live?
 1. Yes 2. No

16. Has the amount of remittances from all sources **abroad**, including friends, relatives, groups, zakat, between now and six months ago:

1. Increased
 2. Decreased
 3. Remained the same
 4. Not applicable (no remittances from abroad)

17. Has the amount of remittances from all sources **in Palestine**, including friends, relatives, groups, zakat, between now and six months ago:

1. Increased
 2. Decreased
 3. Remained the same
 4. Not applicable (no remittances from Palestine)

18. Has monthly household income from all work including informal and part-time jobs changed between now and six months ago?

1. Increased
 2. Decreased
 3. Remained the same
 4. Not applicable (no income from any work)

19. Has there been a change in any of your children's ability to attend school this year?

1. Yes 2. No 3. NA (no children in school)

If no or NA, go to question no. 21

Number of Boys	Number of Girls

20. If so, was the change mainly due to:

- 1. School ceased operations from lack of funds
- 2. Family lacked money for private school tuition
- 3. Family lacked money for public school enrollment fees
- 4. Family lacked money for school supplies
- 5. Family moved
- 6. Other _____

21. During the Eid al Adha holiday in February, 2003, did the amount you spent on *edieh* compared to Eid al Adha, 2002:

- 1. Increase
- 2. Decrease
- 3. Remain the same
- 4. Not applicable (did not give *edieh* at either Eid 2002 or 2003)

22. During Ramadan in 2002, did the number of friends/relatives invited to *iftar* to your house compared to during Ramadan 2001:

- 1. Increase
- 2. Decrease
- 3. Remain the same
- 4. Not applicable (did not invite anyone to house for either Ramadan 2001 or 2002)

23. Did you use any fuel to heat your house this winter?

- 1. Yes
- 2.No

If no, skip to question no. 26

24. Has the amount spent on heating the house this year compared to previous years for the same amount of fuel?

- 1. Increased
- 2. Decreased
- 3. Remained the same
- 4. Not applicable (did not use fuel last winter)

25. If the family spent less on heating fuel this year compared to last, was this mainly because:

- 1. This winter was warmer than normal
- 2. The family had less money to spend on fuel than normal
- 3. Family members sent to other places to live
- 4. The family had alternative methods (wood, etc) of heating the house
 - o Alternative fuels _____
- 5. Other _____

26. If the family has owned a car for the last six months, how has the amount of petrol (gasoline) that you buy each month changed over the last six months?

- 1. Increased
- 2. Decreased
- 3. Remained the same
- 4. NA (no car in family)

If increased, skip to question no. 28

If same, skip to question no. 28

If NA, skip to question no. 28

27. If decreased, is this due to:

- 1. Less money to buy petrol, unable to afford petrol
- 2. Petrol not available for reasons other than cost
- 3. Car not functioning
- 4. Other _____

Part 3: Food Security

28. How often does (did) the household eat a meal with some meat/chicken/fish (either fresh or frozen):

Interviewers should not prompt respondents

Frequency	Over the last month	Over the last 6 months
Never		
Less than once per week		
Once per week		
Twice per week		
Three times per week		
More than 3 times per week		

29. In general, has the amount of food the family consumes on a daily basis over the last 6 months:

- 1. Increased
- 2. Decreased
- 3. Remained the same

30. Over the last six months, have you had to do any of the following in order to afford money for food?

Actions	Yes	No	NA
Forego buying medications or paying for treatments for acute or chronic illnesses			
Paid less or did not pay either electricity, water or gas bill			
Paid less or did not pay rent			
Buy less or did not buy clothes for children when needed			

31. In the past six months, if there have been times when you don't have enough food or money to buy food, how often has your household had to:

Coping Mechanism	Every day	3-6 times per week	1-2 times per week	<Once per week	Never	NA
Generally decrease the amount of food consumed by the household						
Rely on less preferred and less expensive foods (frozen, etc)						
Borrow food, or rely on help from friends or relatives (non-agency given food)						
Begin growing food at home						
Killed farm animals you own for food						
Purchase food on credit						
Gather wild food						
Send household members to live elsewhere						
Limit portion sizes at mealtimes						
Restrict consumption of adults so children can eat						
Reduced the number of meals eaten in a day						
Skip entire days without eating						
Sold jewelry, furniture, gold or other household items to purchase food						
Sold livestock, land, vehicles, or asset used to make a living to purchase food						
Visit relatives during mealtimes						
Sell food ration from agencies						

32. If the amount of food consumed in the household has decreased in the last six months for other reasons besides lack of money, is it mainly due to: (choose one)

1. Less food available in the market
2. More difficulty reaching markets, due mainly to (choose one):
 - 2-1 Checkpoints or curfews have blocked access to the market
 - 2-2 Lack of transportation
 - 2-3 Markets closed or infrequently open
3. More people in the household to feed than usual
4. Other _____
5. Not applicable (has not decreased)

33. Does the household receive food/cash for food from friends or relatives?

1. Yes
2. No

If no, skip to #36

34. What percentage of your total food budget each month comes from friends or relatives?

1. Less than 25%
2. 25-49%
3. 50-74%
4. 75-100%

35. How has the amount of food/cash for food from friends or relatives changed over the last six months?

1. Increased 2. Decreased 3. Remained the same

36. Does the household receive food assistance or food vouchers from any agencies?

1. Yes 2. No

If no, skip to #44

37. What percentage of your total food budget each month comes from food assistance or food vouchers?

1. Less than 25% 2. 25-49%
 3. 50-74% 4. 75-100%

38. Which agency is your main source of food assistance (direct food, ration cards or vouchers)?

1. UNRWA
 2. PARC
 3. CRS
 4. World Vision
 5. Zakat Committee
 6. CHF
 7. ICRC
 8. PA Ministry of Social Affairs
 9. Union
 10. Other NGOs _____
 11. Other organizations (not NGOs) _____

39. What is the content of the food basket from the agency above?

Item	Quantity

40. Do you receive food assistance from any other agencies (check all that apply)?

1. UNRWA
 2. PARC
 3. CRS
 4. World Vision
 5. Zakat Committee
 6. CHF
 7. ICRC
 8. PA Ministry of Social Affairs
 9. Union
 10. Other NGOs _____
 11. Other organizations (not NGOs) _____

41. How has the amount of food assistance or voucher amount changed over the last six months?

1. Increased 2. Decreased 3. Remained the same

42. Currently, on average, how frequently does the household receive food assistance or vouchers from each agency (check all that apply)?

Agency	> Once per month	Once per month	Once every 2 months	< Once every 2 months
UNRWA				
PARC				
CRS				
World Vision				
CHF (Community, Habitat and Finance)				
ICRC				
Zakat Committee				
PA Ministry of Social Affairs				
Other NGO 1				
Other NGO 2				
Other NGO 3				
Other Non-NGO organizations 1				
Other Non-NGO organizations 2				

43. On average, how frequently did the household receive food assistance or vouchers from each agency six months ago?

Agency	> Once per month	Once per month	Once every 2 months	< Once every 2 months
UNRWA				
PARC				
CRS				
World Vision				
CHF				
ICRC				
Zakat Committee				
PA Ministry of Social Affairs				
Other NGO 1				
Other NGO 2				
Other NGO 3				
Other Non-NGO organizations 1				
Other Non-NGO organizations 2				

Part 4: Children, Ages 6-59 months
If no children ages 6-59 months, skip to Part 6

44. Have any children of the household ages 6-59 months had the following over the last 2 weeks:

Illness	Yes	No	If yes, Name(s)
Diarrhea (3 or more watery stools in 1 day)			a b
Fever, not eating well, tired			a b
Worm infection			a b
Vomiting 3 or more times in 1 day, (not burping)			a b
Cough, respiratory illness			a b
Other health issues (specify):			a b

45. Have any children of the household ages 6-59 months had increased frequency of health problems over the last year?

1. Yes 2. No **If no, skip to #47**

46. If health is worse, what illnesses/diseases have worsened?

Illness	Yes	If yes, Name(s)
Frequency of diarrhea episodes (3 or more watery stools in 1 day)		a b
Recurrent illness with fever		a b
Chronic worm infection		a b
Frequency of respiratory illnesses, cough		a b
Chronic medical illnesses		a b
Other health issues (specify):		a

47. Were any of your children born premature or underweight at birth?

1. Yes 2. No

If Yes, names	

48. Have there been any deaths of your children ages 6-59 months in the last year?

1. Yes 2. No

Causes	Malnutrition	Accident (car, fall, violence)	Birth Defect	Infection	Respiratory problem	Other
Name(s)						
1.						
2.						
3.						
4.						
5.						

49. Did you ever breastfeed any of your children?

1. Yes 2. No

If no, go to question no. 59

Name of Child	Current Age of child	For how many months did you breastfeed child (less than 1 month = 0)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Ask the following only if infants in the household 6-12 months of age:

If none, skip to Part 5

If more than one child in the household is 6-12 months of age, use additional questionnaires. Ask regarding all infants 6-12 months of age. If possible, verify with the caregiver of the specific child

50. Are you currently breastfeeding (NAME _____)?

1. Yes 2. No

If no, go to question no. 54

51. How often did you breastfeed (NAME _____) last night, from sunset to sunrise? _____

52. How often did you breastfeed (NAME _____) during the day yesterday (from sunrise to sunset)? _____

53. Did you give a bottle to (NAME _____) during the last 24 hours?

1. Yes 2. No 3. NA

54. At what age did you start giving the following foods to (NAME _____)?

Foods	Months of Age							Not started	Don't know
	< 4	5	6	7	8	9	>9		
Liquids other than milk									
Cheese									
Semi-solids/mashed									
Solids									
Meat									
Fish									
Eggs									
Fruits									
Vegetables									
Food prepared with oils, fat									

55. What other foods or fluids did you give your child who is breastfeeding during the last 24 hours? (Record all answers)

1. Formula
2. Milk (other than breast milk)
3. Tea
4. Water
5. Other fluids
6. Vitamins or medicine in drops or syrup
7. Semi-solid (mashed) or solid food
8. Nothing

56. How many times did (NAME _____) eat solid or semisolid (mashed) food during the last 24 hours?

Number: _____

57. Was yesterday's feeding typical of the way (NAME _____) is fed?

1. Yes 2. No

Part 5: Nutritional Status, Children 12-59 Months

Interviewer read: Now, I will ask some questions about the current food situation of the child. We will ask about the food consumed **yesterday** by the youngest child, age 12 mos. – 59 mos.

24 hour Food Intake Record (Child under 5)

Interviewer read: I will now ask you for details about everything the **youngest** child ate and drank yesterday.

(If asked why from 4:00 -read: “Previous studies show that at 4:00 it is possible to distinguish between one day (24 hours) to the next day (24 hours).

	<p>What did you eat from 4 a.m. yesterday ____until 4 a.m. today ____? If asked “Why 4a.m.?” read: Previous studies have shown that at 4a.m. it is possible to distinguish between one day of 24 hours and the next,”</p> <p>Specify everything you ate and drank in the house and out side of the house, including sweets and snacks, tea, soft drinks, etc.</p> <p>Interviewer: Write each item in a separate row, and when the interviewee has finished, continue next question.</p>		<p>. What time did you begin to eat /drink the _____?</p>	<p>Card no. 1</p> <p>Where did you eat?</p> <ol style="list-style-type: none"> 1. At home (home cooked food) 2. Home-(ready made /bought food) 3-At school-home-prepared food 4 At school- ready made/bought food 5. At school- cafeteria, dining room 6.restaurant 7. other(specify)
	<p>The quick list</p>	<p>√</p>		
A				
B				
C				<p>Which meal?</p>
D				<p>1. Breakfast</p>
E				<p>2. Morning snack</p>
F				<p>3. Breakfast+Lunch (Brunch)</p>
G				<p>4. Lunch</p>
H				<p>5. Afternoon snack</p>
I				<p>6. Lunch/Dinner combined</p>
J				<p>7. Dinner</p>
K				<p>8. Late night snack</p>
L				<p>9. Other (specify)</p>
M				
N				
O				
P				
Q				
R				
S				
T				

Interviewer read: There are foods and drinks which people may forget they ate or drank. . Try to remember if you forgot to mention any of these foods: hot drinks, cold drinks, sweets, salty snacks, fruits, vegetables, bread, water, small foods given to the child outside of regular mealtimes by others.

Interviewer read: I would now like to ask you for additional details regarding the food and drinks that you mentioned. I will ask “where did the child eat” and “which meal was it?” If you remember other foods, tell me. When I ask you about the quantity the child ate or drank, you can use the examples I suggest, the dishes in your house or the information on the wrapper/packet.

Food/Drink description.

To the interviewer: Transfer from the Quick List the item letter to column 1, the hour to column 2, and name to column 5. Mark ✓ on the Quick list in the column near the item you’ve copied and move to columns 3 and 4 using card 2. Complete columns 6 and 7 using the Food Guide.

Item		Where did you eat/drink this item?	What meal was it?	Item name	Food/drink description	What quantity did you eat/drink?
1	2	3	4	5	6	7
					1	
					2	
					3	
					4	
					5	
					6	
					7	
					8	
					9	
					10	
					11	
					12	
					13	
					14	
					15	
					16	

58. Was the amount (NAME _____) ate yesterday similar to the amount he/she usually eats?

- 1. Yes, the same
- 2. No, yesterday he/she ate less than usual
- 3. No, yesterday he/she ate more than usual
- 4. Don't know

If yes, skip to #61

If don't know, skip to #61

59. What is the main reason (NAME _____) ate a different amount to that he/she usually eats?

- 1. Illness
- 2. Vacation, trip, travel
- 3. Lack of time
- 4. Religious holiday
- 5. Family celebration, social occasion
- 6. Stress, boredom, depression
- 7. Didn't feed child for health reasons
- 8. Other, specify: _____

60. Interviewer: "I would like to measure the height and weight of all the children in the household ages 6-59 months. This will give me an idea of their nutritional status."

#	Person Number	Date of Birth dd/mm/yy	Height (cm)	Weight (Kg)
1.				
2.				
3.				
4.				
5.				

Part 6:

61 A. For the researcher: From your general observations about the family nutrition and the family economic situation select one answer of the following:

- 1. Good nutrition and good house condition
- 2. Good nutrition and bad house condition
- 3. Bad nutrition and good house condition
- 4. Bad nutrition and bad house condition

B. Hygiene	Yes	No
1. Utensils are clean and free from dirt/dust/smell		
2. There is no evidence of the presence of mousse or insects in the house		
3. Places and cans used for storing food is suitable for safe storage		
4. The household cleanliness is suitable.		

Coordinator Summary

The questionnaire arrived at the Operational Research Laboratory (ORL) on ___ / ___ /

Entered by: _____ at: _____: _____ Checked: Needs correction? Yes No

Interviewer's corrections returned on date: ___ / ___ / ___

Other corrections needed: Yes No Final questionnaire entry date: _____ by: _____

Entry completed: Yes No