Palestinian Central Bureau of Statistics

Birzeit University

Nutrition Survey – 2002

Analytical Report

June, 2003

Suggested Citation:

Palestinian Central Bureau of Statistics, 2002. *Nutrition Survey - 2002: Analytical Report*. Ramallah - Palestine.

All correspondence should be directed to:
Dissemination and Documentation Department/Division of User Services
Palestinian Central Bureau of Statistics
P.O.Box 1647 Ramallah, Palestine.

Tel: (972/970) 2 2406340 Fax: (972/970) 2 2406343

E-Mail: diwan@pcbs.pna.org web-site: http://www.pcbs.org

Acknowledgment

Dr. Samia Halileh (Assistant Professor/Birzeit University) prepared this report. Mr. Khalid Abu-Khalid and Mr. Khalid Qalalweh contributed to the preparation of the report, including editing and finalization.

Dr. Hasan Abu-Libdeh (President, PCBS), Dr. Rita Giacaman (Director, ICPH/Birzeit University), Mr. Luay Shabaneh (Assistant of President for Statistical Affairs), Mr. Mahmoud Jaradat (Director General, Population and Social Statistics Directorate) and Mr. Mohammed Omari (Assistant of Director General, Population and Social Statistics Directorate) reviewed the report material and provided valuable comments.

Note for Users

- The following symbols were used in the tabulation:

  (-): Not applicable.

  (0.0): The percentage is less than 0.05%.

- Observations differ from one table to another due to missing values.
- PT: Palestinian Territory
- EA: Enumeration Area.
- SD: Standard Deviation.
- NCHS: National Center for Health Statistics.
- WHO: World Health Organization.
- SES: Socio Economic Status.
- LBW: Law Birth Weight.
- MCH: Maternal and Child Health.
- DI: During Intifada.
- BI: Before Intifada.

Table of Contents

Subject **Page**

List of Tables

List of Figures

Executive Summary

Introduction:
Anemia, Stunting and Wasting are nutritional diseases that have been the focus of attention worldwide. They have attracted significant consideration by researchers and policy makers alike, because all three diseases are preventable. It is also due to this reason, that developers of health policy in the Palestinian Territory are concerned about child nutrition. The continuing severe closures, curfews and sieges have disrupted the lives of Palestinian household, causing escalating rates of poverty, disrupting access to health services and decreasing the availability of food. This can only point to a continued worsening of Palestinian children's nutritional status.

The prevailing conditions have been described as "the most severe sustained mobility restriction imposed on the West Bank and Gaza Strip since 1967"[1]. Furthermore, it is believed that "even if the closure is removed tomorrow, it would take longer than two years to recover to pre-crises real per capita incomes. Conversely, a sustained further tightening of closure will impoverish Palestinians and will lead to economic implosion and a scale of hardship so far only hinted at"[2]. Therefore, we can only expect the conditions of children to worsen, and so the need to decelerate the rapid deterioration in Palestinian children's nutritional status must be a top priority. Indeed, the results presented in this report are only part of a larger insult that targeted the Palestinian population, with its vulnerable subgroup of children.

Objectives:
The survey considered indicators that influence child nutrition, in addition to measuring hemoglobin levels and growth parameters for children aged between 6-59 months. This executive summary will highlight the main findings.

Methodology:
The target population consisted of all Palestinian households residing in the Palestinian Territory. The master sample is the sample frame of the 1997 census data. The number of households in the sample was 5,228 - 2,994 in the West Bank and 2,334 in Gaza Strip. The sample was stratified by governorates; place of residence; locality; and size of locality (number of households). Overall, 85% of the questionnaires were completed with a response rate of 95.7%. Data collection took place from March to June of 2002.

[1]World Bank Report, 2002. Fifteen months-Intifada, closure and Palestinian Economic Crises, An assessment, P10
[2]Ibid, P12

Results:

Socio demographic variables:
Results on type of dwelling, crowding, and durable amenities, confirm that there is more poverty in Gaza Strip compared to the West Bank. Rural areas within each region are worse off compared to other localities, however rural Gaza Strip has the worst indicators.
As for income, households without a main source of income increased from 0.6% before the Intifada to 15.1% during the Intifada, and more households became dependent on social welfare. Households having a secondary source of income increased from 19.5% before the Intifada to 35.2% during the Intifada, with many households having social welfare.

The effect of the Intifada on health and nutrition of children:
A large percentage of households (63.9%) found it difficult to obtain food with significantly more households living in rural areas facing difficulties, especially those living in rural Gaza Strip.
A similar percentage (64.7%) of households reduced the quality of their food and 67.4%, 71.4%, and 56.9% reduced the quantity of meat, fruits and dairy products they consumed per month, respectively. Again, households living in rural areas experienced the greatest reduction of food with rural Gaza Strip faring worse.
In adapting to reduction in food consumption, more households in Gaza Strip borrowed money, sold assets, and became dependent on food aid than households living in the West Bank. Households living in rural areas, especially rural Gaza Strip, were least able to use these coping mechanisms.

Difficulty in accessing health care during the past two and a half years of occupation and invasions were more severe in the West Bank compared to Gaza Strip, mainly because of more curfews and sieges. Residents of Gaza Strip experienced greater difficulty in accessing health care due to inability to pay, than residents in the West Bank. This was particularly so for those living in rural areas of Gaza Strip.
Results on accessibility to medical services in case of child illness revealed that households living in Gaza Strip had better accessibility than those living in the West Bank, and within the two regions, rural areas suffered the most inaccessibility compared to other localities.

Mothers:
Almost half of the mothers were below the age of 30 years and 93.3% were not working. More women in Gaza Strip finished secondary education compared to the West Bank, and more women in the camps finished secondary and higher education compared to other localities. Women from rural areas had the lowest percentage of higher education, and it was slightly worse in rural Gaza Strip.
Mothers from the camps equally favored UNRWA and private clinics, while mothers from urban and rural settings preferred private clinics.
Most of the mothers obtained their information from the mass media (75.6%), and from friends and relatives (72.9%).
Mothers' knowledge about child feeding, causes and prevention of anemia were moderately correct.
Mothers' perceptions about thin and short children were significantly correct, but many children who were normal were thought to be short or thin by their mothers.

Children:
Almost half of the households have up to 4 children.
The results on spacing indicated that 18.7% of children have a sibling born before within 18 months, and 29.1% have a sibling born after within 18 months, with no sex variation.
Children suffering from chronic diseases constitute 6.7% of all the children.
Children born premature were at 15%, and 12.3% were of low birth weight. Low birth weight was found to be significantly affected by the sex of the child (15.2% for females versus 9.4% for males).

Most of the children (95.8%) were breast-fed, and 56% of mothers introduced other milk, half of whom introduced it in the first three months of age. Most of the milk used by mothers was formula milk with no sex variation.
Since vitamin A and D is only provided by Government clinics, this was reflected on its use - 25.9% in Gaza Strip and 63.8% in the West Bank.
All MCH clinics provide iron prophylactically for infants at 6 months of age, but there are slightly more children in Gaza Strip on iron (39.6%) than in the West Bank, (34.1%) and more in the camps, compared to other localities.

Child weaning and feeding practices by mothers indicated that most of the children eat a diet low in iron and protein. Since child growth has worsened during the past two and a half, and there is evidence that Israeli measures have increased poverty, availability and accessibility to food and health services, one can assume the trend to be attributed to the hardship imposed on Palestinian households by the Israeli army.
The results on nutritional indicators showed anemia below 11mg/dl to be at 37.9%, with more anemia in Gaza Strip compared to the West Bank, and more in the camps compared to other localities.

Anemia was influenced by source of income, with households of stable and adequate income having children with fewer anemias. Also children of a lower birth order and those consuming chicken once a week or more, have fewer anemias.
A small percentage of children were thin (3.5%) or wasted (2.5%), while 9% were stunted.
Rural areas overall have the highest percentage of thin, wasted and stunted children.
Stunting is highest in rural Gaza Strip compared to other areas. It is also highest in households of a low socioeconomic status compared to those of a high socioeconomic status; highest in households who reported a change in food consumption; highest in households with illiterate mothers compared to other levels of education; and highest in children with chronic diseases, with at least 2 parasitic infections or with low birth weight.
There is also more stunting in children who drink tea, and less stunting in children who consume milk products 2-3 times a week.

As for wasting, there are fewer wasted children in rural areas, in more crowded households, in households who work in the private sector, and in children who drink tea. There is also less wasting in children who eat chicken or meat at least once a week, and in those children who consume any intake of green vegetables or frozen fish. There is more wasting in children who are on iron medication and with lower birth order.
In general, there are more thin children in the West Bank compared to Gaza Strip, but least in rural areas. More thin children in households with illiterate mothers and in those with chronic diseases or at least 2 parasitic infections.

Conclusion

Nutritional indicators in children were influenced by two major determinants, some of which were intrinsic to the mothers and health services, but the main determinants were triggered, others accentuated by the Israeli measures since the Oslo Accords in 1994, and during the ongoing escalation of military violence, destruction, and re-occupation since September 2000:

- Poverty; which includes income, type of dwelling, crowding, and durable amenities, as well as source of income and change in food consumption. In the same group, one should include mother's weaning and feeding practice, which was affected by availability and affordability of essential food items.
- Availability, accessibility, and affordability of health services, and the ineffective policy of the MCH clinics in the management of iron deficiency anemia.

Chapter One

Introduction

Torn by years of chronic conflict, superimposed on periods of acute deterioration, the Palestinian Territory (PT) is not an ideal environment for healthy childrearing. Palestinian children have not known a life other than life under Israeli occupation, and have suffered the consequences of their homeland's occupation in many ways, especially in terms of economic, social and psychological deprivation.

Since the beginning of the current uprising (Intifada) in September 2000, living conditions in the PT have worsened considerably, adding heavy burdens to the lives of adults and children. This is especially true for children under the age of five, who are the focus of this survey. These children have suffered grave violations of their basic human rights: the right to life, food, shelter and education. Moreover, they have also suffered the consequences of psychological abuse, distress, fear and the feeling of insecurity and instability in their family life. No one, whether parent, family or the Palestinian Authority, has been able to guarantee the protection of any of the internationally recognized rights of Palestinian children, including their right to good health, as the country continues to suffer from closures, siege, rampant destruction of infrastructure and homes, systemic collapse, and economic collapse. War-like conditions have become the normal and only way of life that Palestinian children know.

While the detrimental effects of such violations can manifest themselves in many ways, this report focuses on selected child health indicators, perhaps uncovering only the tip of the iceberg of the child health profile in the PT. The indicators included in this survey are: children's weight, height and hemoglobin levels. In the analysis of nutritional status of children, weight for height (wasting), height for age (stunting) and anemia were the only indicators analyzed with other independent variables. This is because weight for age, which has been omitted from the analysis, but presented in the results, is a general indicator for trends in a population and is highly dependent on the height of the child, therefore not useful for detailed analysis.

This report is divided into five chapters: the first is an introduction, the second is definitions and explanations, the third is methodology, the fourth is child nutrition. Child nutrition includes the nutritional status of the children, the children's socio-economic and family settings -- such as mothers' educational levels and family standards of living -- as well as behavioral indicators such as those related to breast feeding, weaning and feeding practices. This chapter also includes relevant survey results related to the general impact of Israeli measures, like family access to food and ways by which families coped with a reduction in the quantity of food available for consumption.

Finally, the fifth chapter concludes women characteristics, such as marital status, pregnancies, anemia prevalence among women related to other socioeconomic and demographic characteristics of women and anemia prevalence.

Chapter Two

Definitions and Explanations

Growth Charts:
The normal growth of children in a given population can be determined by following a group of healthy children from birth to a certain age or by doing a cross sectional survey of healthy children at all ages.
In the USA, data were assembled by the National Center for Health Statistics (NCHS) that met the criteria for a reference population. Since it was found that children living under optimal conditions in different countries have similar growth patterns resembling those of the NCHS data, the WHO has since encouraged the use of NCHS charts by all countries.

Nutritional Status:
A nutritional status survey measures and allows us to describe the current status of the child, both in terms of immediate acute factors such as inadequate current intake of food, childhood diseases, and diarrhea leading to wasting, as well as the accumulated impact of chronic deprivation leading to stunting.

Malnutrition:
The term malnutrition is used to cover a multiplicity of disorders, ranging from deficiencies of specific micronutrients, such as vitamins and minerals, to gross starvation or (at the other extreme) obesity. This discussion is largely limited to protein and calorie malnutrition, which is manifested primarily by retardation of physical growth in terms of height and weight.
Abnormal anthropometry is statistically defined as a value below –2SD or Z score (2.3rd percentile), or above +2SD or Z score s (97.7th percentile), relative to the reference mean or median. These cut off points define the central 95% as the normality range. These measures are used as a guide to facilitate screening or monitoring of growth.

Height for Age:
This parameter reflects the achieved linear growth and its deficit indicates long-term cumulative inadequacies of health or nutrition. Two related terms are used when describing this parameter: length and stature. Length is the measurement while in a recumbent position and is used for children under 2 years of age, while stature refers to standing height. For simplification, the term height is used for both measurements in this report. Low height for age (below –2SD of the NCHS/WHO reference) ranges from 5 to 65% among less developed countries. In low prevalence countries, it is most likely due to normal variation, i.e. shortness; in less developed countries it is likely to be due to a pathological process, resulting in stunting. A pathological process can be from the past or a continuous process.

Weight for Height:
This parameter reflects body weight to height. Its use carries the advantage of requiring no knowledge of age. However it is not a substitute for the other indicators. Low weight for height is called thinness if normal or wasting if pathological and can reflect a recent or chronic condition. Prevalence in non-disaster areas is around 5%. Lack of evidence of wasting in a population does not imply the absence of current nutritional problems.

Weight for Age:
This parameter is influenced by both the height and weight of the child. It reflects the long and short-term health of an individual or population. Lightness and underweight have been used to describe normal and pathological processes. High weight for age is not used to describe obesity.

Anemia:
Iron-deficiency anemia is the most prevalent of all micronutrient deficiencies, affecting one third of the population worldwide (UNICEF, WHO, 1999). Iron deficiency anemia develops when there is an inadequate intake or bioavailability of dietary iron. Infants, children, and pregnant and lactating women are the population groups most vulnerable, due to their increased dietary requirements for growth and reproduction. The functional consequences of iron deficiency are: reduced tolerance to exercise, growth retardation, and impaired mental development.

Chapter Three

Methodology

3.1 The Survey Questionnaire:

The Palestinian Central Bureau of Statistics (PCBS) developed the survey questionnaire by combining and adapting questions contained in the following standard questionnaires:

1. The Health Survey 2000 questionnaire, implemented by the PCBS in 2000;
2. The UNICEF questionnaire for Multiple Indicator Cluster Surveys (MICS II);
3. The Standard Demographic and Health Survey questionnaire;
4. Other demographic and health survey questionnaires (DHS).

The resulting questionnaire consisted of the following sections:

1. *A household questionnaire,* which included the following sections:
    - A control sheet: items related to quality control sample identification, interview schedule, and interview results;
    - A household roster: demographic variables such as age, sex, relation to head of household, date of birth, and health services-related variables such as health insurance;

2. *A housing questionnaire,* which included questions on housing conditions, such as water sanitation, source of disposals and number of rooms; main sources of income; difficulties facing families in obtaining food during the *intifada*; and food modules;

3. A *child health questionnaire***,** which included questions on breastfeeding status, prevalence of chronic diseases among children, vitamin supplementation, complementary feeding, child weight at birth, and maternal nutritional behavior during the first years of the child's life;

4. *An anthropometry and Hb level questionnaire,* which included questions on anthropometrical and hemoglobin levels measurements for children aged 6-59 months.

3.2 Sampling:

The Nutrition Survey-2002 sample is a sub-sample obtained from the Health Survey-2000 (HS2000) sample.

Target Population

The target population consisted of all Palestinian households that usually reside in the Palestinian Territory. The survey focused on the nutritional status of children aged 6-59 months.

Sample Frame

The master sample is the sample frame of the 1997 census data. The selected Enumeration Areas (EAs) were divided into small units called cells. One cell per EA was selected.

Sample Size

Different criteria were taken into account when sample size was determined. The level of sampling error for the main indicators, the ability to generalize results by region and locality, and a 10% incomplete questionnaire yield were main considerations.

The overall sample contained 225 EAs; 133 in the West Bank and 92 in the Gaza Strip. The sample cells were increased to 234 cells; 142 in West Bank and 92 in the Gaza Strip.

The number of households in the sample was 5,228 households, with 2,994 in the West Bank and 2,234 in the Gaza Strip.

3.3 Sample Design:

The sample is a stratified multi-stage random sample, in which four levels of stratification were made:

1. Stratification by governorate;
2. stratification by place of residence, which comprised:
   (a) Urban (b) rural (c) refugee camps
3. Stratification by classifying locality, excluding governorate capitals, into three strata based on household ownership of durable goods within these localities;
4. Stratification by size of locality (number of households).

A compact cluster design was adopted because the sample frame was not up-to-date. As mentioned above, the first sampling units were divided into small units (cells). Then one cell from each EA was randomly selected.

3.4 Response rates:

Overall, 85.0% of the questionnaires were completed; 80.6% in the West Bank, and 90.9% in the Gaza Strip. The response rate was about 95.7%; 93.5% in the West Bank and 98.3% in the Gaza Strip.

3.5 Weighing:

Weights have been calculated for each sampling unit, reflecting the sampling procedures. To make the weighing procedure feasible and simple, we assumed that the households had been selected directly within the EA.

3.6 Variance calculations:

It is important to calculate the sampling error and show it beside the estimates, as this gives the data user an idea about the efficiency and accuracy of the estimates.

Total survey errors are divided into two types: sampling errors and non-sampling errors. Non-sampling errors arise during data collection and data processing, such as due to a failure to interview the correct unit and/or mistakes made by the interviewer or the respondent. It is still difficult to estimate non-sampling errors; however, many procedures were adopted during training, fieldwork and data processing to reduce such errors. Sampling error, on the other hand, is a measure of the variability between all possible samples and can be estimated from the survey results.

The Ultimate Clusters method was used for variance calculations; the variance formula depends on the type of estimate (ratios, means, totals…etc.). The statistical package CENEVAR was used for variance calculations.

3.7 Pilot study:
The aim of the pilot study was to test all activities related to the main survey, including: the questionnaire, training of interviewers, survey instructions and procedures, the sample, the conducting of interviews, data entry, and data processing.

The pilot study took place in February 2002 in three West Bank governorates (Ramallah and al-Bireh, Hebron, and Bethlehem), with a sample size of 136 households.

The survey results were evaluated using several methods, including debriefing meetings with fieldwork teams. Changes in the survey plan were required.

3.8 Fieldwork operations:
Recruitment
The recruitment of fieldworkers was restricted to women. The Fieldwork Directorate at the PCBS screened all available female applicants and designed a scale to rank applicants using objective criteria. Subsequently, 51 interviewers and 24 supervisors and editors were selected to work in the West Bank and Gaza Strip.

Training
The draft fieldwork manual prepared for the pilot survey was reviewed, edited, and utilized for training.

Due to the Israeli closure of the Palestinian Territory, the main training was conducted at each governorate separately using videotapes. A 12-day intensive training course for 128 trainees (74 in the West Bank and 54 in the Gaza Strip) was also performed.

The training materials consisted of basic survey documents such as questionnaires and interviewer and supervisor instruction manuals.

The training course for interviewers consisted of:

- Classroom lectures on the objectives and organization of the survey;
- A detailed explanation of the questionnaire;
- Instruction on the "art of asking questions."

Training on the principles of interviewing included a demonstration of interview techniques through role-playing and practice interviews. A training course for Ramallah and the Gaza Strip was conducted via videoconference for three days in order to unify the training. Also, a two-day intensive course was conducted in Nablus for the Nablus team, after the completion of the 12-day training course.

3.9 Fieldwork organization:

As mentioned above, due to the strict Israeli closure and occupation of many areas in the Palestinian Territory, data collection did not start on the same date in all governorates. Also, because of the Israeli incursion into various governorates within the West Bank during April 2002, data collection was stopped during this time.

The main fieldwork started in the central West Bank and Gaza Strip on March 25th, 2002 and was completed in all governorates on June 30, 2002.

Thirteen fieldwork teams in the West Bank and Gaza Strip undertook fieldwork. Each team consisted of three - five interviewers, one supervisor, one assistant, one field editor, and one laboratory technician.

3.10 Measures of data quality control in the field:

A set of rules and measures were used to ensure data quality:

- Fieldwork supervisors were responsible for data quality in the field. A supervisor followed up with the field team on a continuous basis, evaluating their work by reviewing questionnaires and attending interviews, as necessary.

- Completed questionnaires were reviewed by the editor to ensure that the fieldworker had completed all questions, followed-up on skipped questions, accurately calculated age, and completed all data for eligible children and women.

- Fieldwork coordinators carried out quick reviews of samples of received questionnaires at headquarters. Field coordinators also followed up with the editors on questionnaires returned to the field.

3.11 Data Processing:

The statistical package BLAIS was used in data entry, which was organized in a number of files corresponding to the main parts of the questionnaire.

A data entry template was designed to reflect an exact image of the questionnaire. It included various electronic checks such as logical checks, consistency checks, and cross-validation. Continuously thorough checks on the overall consistency of the data files and sample allocation were sent back to the field for corrections.

Data entry started on June 5th, 2002 and was completed on July 28th, 2002. Data cleaning and checking processes were performed simultaneously with data entry. Thorough data quality checks and consistency checks were carried out.

SPSS for Windows (version 10.0) and specialized health and demographic analysis programs were used to perform final tabulations of results.

Chapter Four

Child Nutrition

The 2002 nutritional survey was completed during exceptional political conditions- military re-occupation of the entire West Bank, and recurring military invasions into Gaza Strip. The survey targeted children between 6-59 months living in different types of localities in the Palestinian Territory, in an attempt to look at child nutrition and their possible determinants, some of which were directly related to the current situation. The study addressed many issues, such as poverty, availability and accessibility of health services, changes in quality and quantity of food in the last two years and weaning and feeding practices. The study also entailed measuring the weights and heights of children as well as their hemoglobin levels, calculating specific indicators of child malnutrition such as anemia, wasting, thinning and stunting.

This report contains a presentation of the main variables in the survey and seeks to identify associations between child nutritional parameters and selected determinants in order to discover trends, practices, and situations that can affect child nutrition, as they are important to offset the process of increasing malnutrition in Palestinian children- although pockets of malnutrition among Palestinian children were found by the 2000 Health Survey, one would expect the situation to have drastically deteriorated under the current Israeli measures.

4.1 Socio Demographic Variables

4.1.1 Type of dwelling:

Most Palestinians (67.3%) live in villas or houses (separate dwellings), with the highest percentage living in the rural areas (83.2%), where land is abundant. Apartments are the second most common dwelling (31.1%), with the highest percentage in urban areas (41.9%).
Comparing regions, there are more separate dwellings in the West Bank (73.6%) than in Gaza Strip (57.4%) due to larger rural areas.

Table 4.1: Percentage distribution of children's households by type of dwelling and selected background characteristics

Selected background characteristics	Type of dwelling			Total
	Villa/House	Apartment	Other	
Region*				
West Bank	73.6	24.5	1.9	100
Gaza Strip	57.4	41.6	1.0	100
Type of locality**				
Urban	56.2	41.9	1.9	100
Rural	83.2	15.6	1.2	100
Camp	67.8	30.7	1.5	100
Palestinian Territory	**67.3**	**31.1**	**1.6**	**100**

*X^2= 109.78, P<.00005
** X^2= 202.78, P<.00005

4.1.2 Number of rooms:

The range of rooms present in houses is between 1 and 24 rooms; with 59% of houses having up to three rooms. House density has a range of 0.21 to 11 adults per room. Households with 3 or less adults per room (not crowded) compared to those with more than 3 (crowded) make up 44.7% of households.

Table 4.2: Percentage distribution of children's households by crowding of households

Crowding	Percentage
Not crowded	44.7
Crowded	55.3
Total	**100**

There is no significant difference between crowding in the different types of localities, but there is more crowding in Gaza Strip (61.3%: x^2=29.73, p<.00005) compared to the West Bank, and especially within the camps of Gaza Strip (66%: x^2= 6.25, p=.044). As for the West Bank, rural areas are most crowded (55%: x^2=8.19, p=.017).

4.1.3 Durable goods:

Durable goods present in the home were used to assess the socio-economic status of the family. The study revealed that 92.2% of households have a colored TV, 70.9% have a radio, (65%) have a solar boiler, 60% have mobile phones, and over 50% have satellite TV.

Goods owned by fewer households are automatic washing machines (26.3%), private car (24.3%), and video (18%). Very few households own a computer (12.4%), microwave (8.2%), dish-washer (1.1%), Internet connection (2.2%), and laundry dryer (5.4%).

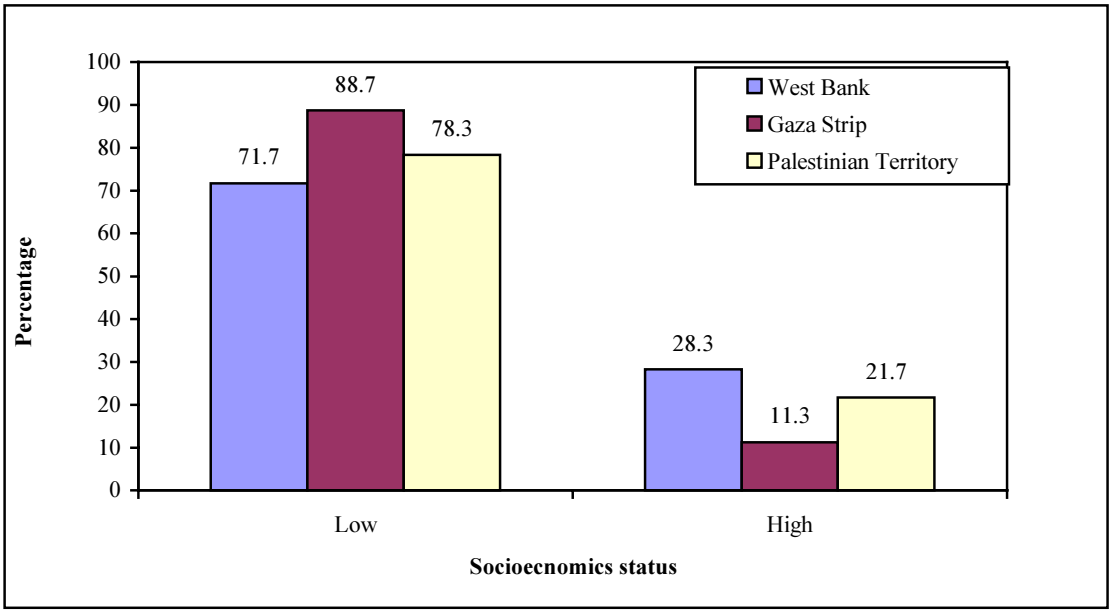
Categorizing households into high socio-economic status based on durable goods owned by the very few, indicated that 21.7% of children live in households of high socio-economic status.

Table 4.3: Percentage of children's households by availability of durable goods

Goods	Percentage
Private Car	24.3
Solar boiler	65.2
Mobile phone	60.0
Satellite	53.4
Computer	12.4
Dish washer	1.1
Colored TV	92.2
Video	18.0
Internet	2.2
Dryer	5.4
Automatic washer	26.3
Radio	70.9
Microwave	8.2

Examining socioeconomic status by type of locality and region, showed no variation within type of locality in socioeconomic status, but there are significantly more households in the high socioeconomic status in the West Bank compared to Gaza Strip.

Figure 4.1: Percentage distribution of children's households by socioeconomic status and Region



X^2= 134.27, P<.00005

Once type of localities were controlled by region, it became clear that rural areas in both regions had the lowest percentages of households with a high socio-economic status; in Gaza Strip (x^2= 7.52, p=.023) and in the West Bank (x^2=37.97, p<.00005), with rural Gaza Strip having the lowest rate out of all localities (3.0%), compared to an average of 11.3% in Gaza Strip and 21.6% in rural West Bank.

4.1.4 Source of income:

Main source of income:
Comparing the main source of income before and during the Intifada, the most significant changes were: a dramatic reduction in the percentage of people whose main source of income comes from working in Israel from 33.2% to 9.7%; a sharp increase of households with no income from 0.6% to 15.1%, and a slight increase in those who use social welfare, from 2.5% to 6.5%.

Table 4.4: Percentage distribution of children's households by main source of income before and during Intifada

Source of income	Before the Intifada	During the Intifada
Farming/fishing	3.5	5.5
Household projects	14.3	15.4
Wages and governmental salaries	16.2	18.8
Wages and private salaries	25.8	22.0
Wages Israeli work sector	33.2	9.7
Receiving remittances (internal)	0.1	0.6
Receiving remittances (abroad)	0.8	1.0
Social welfare	2.5	6.5
UNRWA wages and salaries	1.4	1.8
Other	1.5	3.6
No income	0.7	15.1
Total	**100**	**100**

Examining the type of locality and main source of income during the Intifada revealed trends that reflected job and income stability. For example, more households living in the camps enjoy employment in the Government (26.2%) and UNRWA (4.6%), and more households depend on social welfare (12.6%) from UNRWA, than those in other localities. As for the rural areas, more households work in Israel (14.6%) and in farming (9.1%). Both of these types of employment have suffered due to severe Israeli imposed restrictions of movement on the Palestinian population. As a result, there are more households in rural areas with no income (16.3%), and only a small percentage (4.0%) depend on social welfare as it is less available. Households living in urban settings work mainly in family businesses (16.7%) or as private employees (24.5%) and the lowest percentage with no income (13.9%) is found there.

Table 4.5: Percentage distribution of children's households by main source of income before Intifada and type of locality

Source of income	Type of locality		
	Urban	Rural	Camps
Farming/fishing	5.3	9.1	1.0
Household projects	16.7	14.1	14.8
Wages and governmental salaries	18.7	13.2	26.2
Wages and private salaries	24.5	22.3	17.1
Wages Israeli work sector	8.9	14.6	4.8
Receiving remittances (internal)	0.7	0.9	0.3
Receiving remittances (abroad)	1.2	1.3	0.3
Social welfare	5.0	4.0	12.6
UNRWA wages and salaries	1.2	0.5	4.6
Other	3.9	3.7	2.7
No income	13.9	16.3	15.6
Total	**100**	**100**	**100**

X^2=278.82, p<. 00005

Looking at source of income during the Intifada by region, there are more households in Gaza Strip who live on social welfare (10.5% vs. 4.0%) or have no income (18.6% vs. 12.8%) compared to the West Bank, confirming the fact that there is more poverty in Gaza Strip than in the West Bank.

Table 4.6: Percentage distribution of children's households by main source of income during Intifada and region

Source of income	Region	
	West Bank	Gaza Strip
Farming/fishing	5.5	5.4
Household projects	17.1	12.8
Wages and governmental salaries	13.0	28.0
Wages and private salaries	25.3	16.8
Wages Israeli work sector	14.9	1.5
Receiving remittances (internal)	0.8	0.5
Receiving remittances (abroad)	1.5	0.2
Social welfare	4.0	10.5
UNRWA wages and salaries	0.7	3.5
Other	4.4	2.2
No income	12.8	18.6
Total	**100**	**100**

x^2= 403.08, p<.00005

It has not been possible to analyze types of localities within regions due to the small numbers in some of the categories.

Secondary source of income:

As income deteriorated under the Israeli occupation and invasion, more households sought secondary sources of income. This caused a decrease in those with no source of secondary income from 80.5% to 64.8%. Other change in secondary source of income is an increase in households using social welfare from 4.4% before the Intifada to 20.8% during the Intifada.

Table 4.7: Percentage of children's households by secondary source of income before and during Intifada

Secondary source of income	Before the Intifada	During the Intifada
Farming/fishing	5.5	6.9
Household projects	2.8	3.0
Wages and governmental salaries	2.6	2.5
Wages and private salaries	2.9	3.1
Wages Israeli work sector	1.6	0.7
Receiving remittances (internal)	0.3	0.4
Receiving remittances (abroad)	0.4	0.7
Social welfare	4.4	20.8
UNRWA wages and salaries	0.5	0.9
Other	0.8	2.4
No income	80.5	64.8

4.1.5 Main source of drinking water:

The most common source of water for dwellings is a main water pipe from the public network connected to the dwelling (81.6%). Other sources are rain water connected to a dwelling (8.9%), and the rest (9.5%) use a public tap, rain water not connected to dwelling or tanker trucks, and others.

A main water pipe is least available in rural areas (67.6%) compared to 86.7% in urban areas and 89.8% in the camps (x^2= 479.70, p<.00005), with no significant difference between Gaza Strip (82.8%) and the West Bank (80.9%).

4.1.6 Sewage system:

Most dwellings use a cesspit (51.4%), followed by a public sewage system (47.8%), and a small percentage of dwellings (0.6%) have no sewage system at all.

An examination of sewage systems within types of localities and regions showed that the highest percentage of public sewage systems is in the camps at 76.8%, and the lowest is in rural areas at 13.7%. This is reflected in regional comparisons with more public sewage systems in Gaza Strip than in the West Bank.

Table 4.8: Percentage distribution of children's households by type of sewage and selected background characteristics

Selected background characteristics	Type of sewage			None	Total
	Public	Cesspit	Other		
Region*					
West Bank	38.0	61.3	0.2	0.5	100
Gaza Strip	63.4	36.0	0.0	0.6	100
Type of locality**					
Urban	55.7	43.8	0.2	0.3	100
Rural	13.7	85.2	0.0	1.1	100
Camp	76.8	22.5	0.3	0.4	100
Palestinian Territory	**47.8**	**51.4**	**0.2**	**0.6**	**100**

*X^2= 208.03, P<.00005
**X^2= 792.07, P<.00005

When looking at type of locality within region, rural Gaza Strip seemed to be worst off overall as 14.2% of rural West Bank is covered by a public sewage system compared to only 8% in rural Gaza Strip, and 3% of rural Gaza Strip have no sewage system at all compared to 0.9% in rural West Bank.

4.1.7 Toilet facilities:

Most households have traditional toilets, while a quarter each have a flushed toilet or combination of traditional and flushed.

Table 4.9: Percentage distribution of children's households by type of toilet

Type of toilet	Percentage
Flush toilet	27.5
Traditional toilet	47.6
Both	24.6
Other	0.1
No facility	0.2
Total	**100**

4.1.8 Farming home gardens:

A small percentage of households (16%) farmed their home gardens during the occupation and invasions.

Most of them live in rural areas (23.9%), followed by urban dwellers (17.6%), and a small number (3.0%) lived in the camps. Consequently, there are significantly more households farming their gardens in the West Bank (20.6%) than in Gaza Strip (8.9%) with its predominant camp population, possibly reflecting the lack of space in the camps.

Table 4.10: Percentage of children's households whose farmed their home garden by selected background characteristics

Background characteristics	Percentage
Region*	
West Bank	20.6
Gaza Strip	8.9
Type of Locality**	
Urban	17.6
Rural	23.9
Camps	3.0
Palestinian Territory	**16.0**

*X^2= 80.13, p<. 00005
**X^2= 149.62, p=<. 00005

Mode of dealing with garden product:

Most of the households used their garden produce for household use (86.4%) and 9.9% sold some and used the rest. A very small number of households (3.4%) sold all their garden produce.

This may suggest that households living in rural and urban settings are able to farm their gardens and use the produce for home consumption, as opposed to households living in the camps. However, this is not an indication of availability of food for consumption during sieges as the questions do not clarify whether the grown produce is seasonal, which means that they would not necessarily be available during times of siege.

Table 4.11: Percentage distribution of children's households that farming garden by methods of dealing with garden products

Dealing with garden products	Percentage
Household use	86.4
Selling	3.4
Selling some and using the rest	9.9
Other	0.3
Total	**100**

4.1.9 Breeding animals:

Very few households breed animals with chicken being the most common animal to be bred (12.7%).

Looking at the type of locality in which animals are bred, 46% of such households are found in rural areas, 41.1% in urban areas, and 12.9% in the camps. These results are similar to those for the distribution of households farming their gardens.

Of those who breed animals, 43.1% come from Gaza Strip, which is a higher percentage than those who farm their gardens, and 56.9% come from the West Bank.

Table 4.12: Percentage distribution of children's households that breed animals by region and type of locality

Region and Type of locality	Percentage
Region	
West Bank	56.9
Gaza Strip	43.1
Type of Locality	
Urban	41.1
Rural	46.0
Camps	12.9
Total	**100**

Mode of dealing with animal product:

The total percentage of households who breed animals, and who answered the question on mode of dealing with animal produce, was 20.7%. This is slightly more than the 16% who farm their gardens. Of this, 71.1% use animal produce for home consumption, and 21.3% sell some and use the rest. As in farming home gardens, a very small percentage of households sell all their produce (5.5%).

4.2 The impact of Israeli measures on health and nutrition of children during Intifada

4.2.1 Food availability and consumption

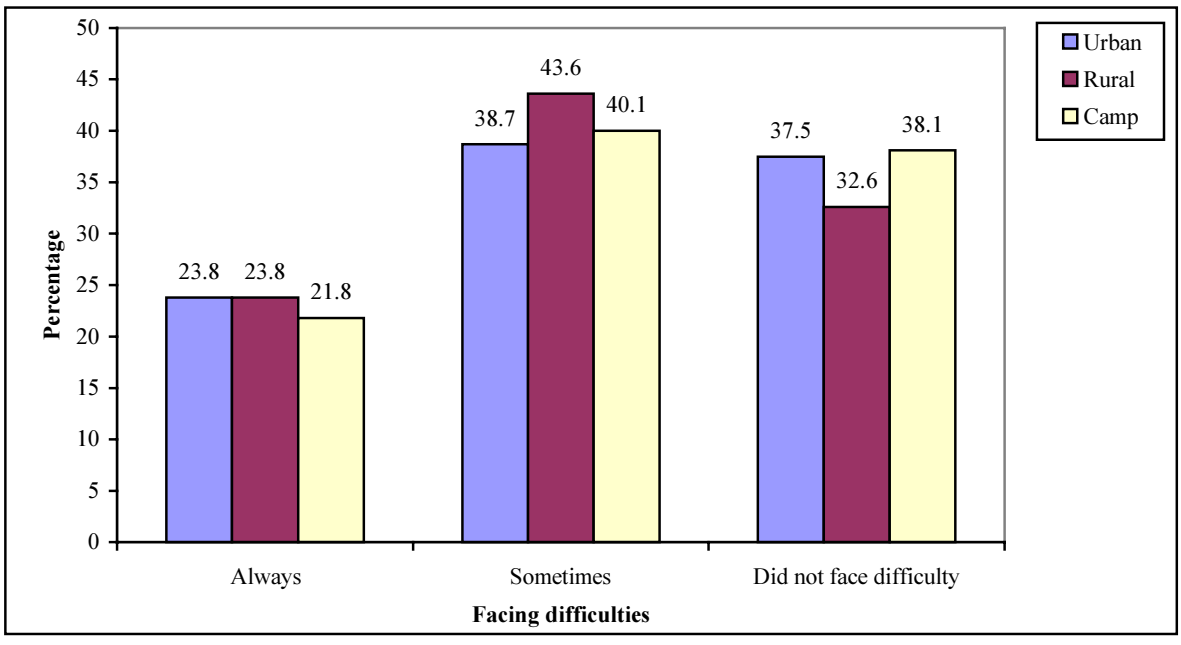
Difficulty in obtaining food:
Almost one third of households (36.2%) found no difficulty in obtaining food during the Intifada.

Table 4.13: Percentage distribution of children's households faced difficulties in obtaining food during Intifada

Difficulty in obtaining food	Percentage
Yes, always	23.3
Yes, sometimes	40.5
No	36.2
Total	**100**

An analysis of the variable within type of locality revealed a smaller percentage of households having no difficulties in obtaining food in rural areas (32.6%), compared to camps (38.1%) or urban areas (37.5%). This finding is expected because of the severe closures that isolated rural areas from each other, and from urban and sub-urban areas where food supplies are normally kept.

Figure 4.2: Percentage distribution of children's households faced difficulties in obtaining food by type of locality



X^2= 9.73, P=.045

There was no regional variation in the difficulties faced in obtaining food. However, looking at types of localities within regions, there was a significant variation in urban and rural settings

within the two regions, and border line significance for camps. The urban areas in the West Bank faced fewer difficulties sometimes (34.5%) in obtaining food, compared to urban areas in Gaza Strip (43.0%). On the other hand, rural Gaza Strip seemed to be badly affected by the situation and suffered the most, with 40% having difficulties always in obtaining food, compared to rural West Bank (22.0%).

Table 4.14: Percentage distribution of children's households faced difficulties in obtaining food by Type of locality controlling for region

Type of locality controlling for region	Facing difficulty in obtaining food			
	Yes, always	Yes, sometimes	No	Total
West Bank				
Urban	23.8	34.5	41.7	100
Rural	22.0	43.6	34.4	100
Camp	19.5	44.9	35.6	100
Total	**25.1**	**40.6**	**34.3**	**100**
Gaza Strip				
Urban	23.8	43.0	33.2	100
Rural	40.0	43.0	17.0	100
Camp	23.8	36.2	40.0	100
Total	**22.2**	**40.4**	**37.4**	**100**

Urban: X^2= 14.26, P=. 001
Rural: x^2= 20.61, p<. 00005
Camp: X^2= 14.26, P=. 041

4.2.2 Causes of difficulties in obtaining food:

One third of households mentioned that the difficulty in obtaining food was due to loss of income, and more than half (54.5%) said it was due to the siege, and almost a quarter (24.1%) said it was the curfews.

Table 4.15: Percentage of children's households by causes of difficulties faced them in obtaining food

Causes of difficulty	Percentage
Siege	54.5
Curfew	24.1
No income	34.7
Other	4.3

Difficulty in obtaining food by type of locality and region:
Curfews (52.2%) and sieges (89.6%) affected rural areas significantly more than urban and camp settings, and were the overall main causes for households finding it difficult to obtain food. Other causes were not significantly different between types of localities.

Table 4.16: Percentage of children's households by causes of difficulties faced them in obtaining food and type of locality

Causes	Type of locality		
	Urban	Rural	Camp
Siege*	82.0	89.6	85.8
Curfew**	27.3	52.2	37.5

*X^2=18.38, P<. 00005
**X^2=105.24, P<. 00005

Looking at causes of difficulty in obtaining food by region; siege and curfews were significantly more prevalent in the West Bank than in Gaza Strip, while loss of income was more prevalent in Gaza Strip than the West Bank.

Table 4.17: Percentage of children's households by causes of difficulties faced them in obtaining food and region

Causes	Region		Pearson chi-square
	West Bank	Gaza Strip	
Siege	90.4	77.9	X^2=63.60, P<0.00005
Curfew	61.1	2.8	X^2=737.45, P<0.00005
Loss of income	52.5	57.1	X^2= 4.27, P=.039
Other	5.7	8.4	X^2= 5.57, P=.018

An analysis of types of localities within regions revealed that curfews and siege mainly affected the West Bank localities, with hardly any curfew imposed on localities in Gaza Strip, while loss of income affected mainly the urban areas in Gaza Strip

Table 4.18: Percentage of children's households by causes of difficulties faced them in obtaining food and type of locality controlling for region

Causes and type of locality	Region		Pearson chi-square
	West Bank	Gaza Strip	
Urban			
Siege	87.6	77.1	X^2 =17.43, P<.00005
Curfew	55.3	2.6	X^2 = 329.35, P<.00005
Loss of income	49.7	59.0	X^2 = 8.19 P=.004
Total	**58.3**	**66.8**	
Rural			
Siege	91.7	73.8	X^2 = 25.40, P<.00005
Curfew	59.1	2.4	X^2 = 93.95, P<.00005
Loss of income	53.1	51.2	Not significant
Total	**65.6**	**83.0**	
Camps			
Siege	92.1	80.4	X^2 = 13.83, P<.00005
Curfew	77.6	3.0	X^2 = 291.02, P<.00005
Loss of income	56.6	55.5	Not significant
Total	**64.4**	**60.0**	

4.2.3 Pattern of eating during the Intifada:

Results from questions comparing patterns of eating before and during the Intifada revealed that more than half of the households had a reduction in the quality of food (64.7%) consumed in general and in particular, the quantity of meat (67.5%), fruits (71.5%), and dairy products (56.9%) consumed per month.

Reduction in food consumption by type of locality and region:

A reduction in the quality of food and quantity of meat consumed per month mostly affected rural areas. In addition, a reduction in the consumption of fruits per month mainly affected rural areas and a reduction of dairy products consumed per month mainly affected the camps.

This may imply that fruits and dairy products are readily available in rural areas, which is to be expected.

Table 4.19: Percentage of children's households that reduce food in quality and quantity by type of locality

Reduction of food in quality and quantity	Type of locality			Pearson chi-square
	Urban	Rural	Camp	
Quality of food	61.9	70.3	62.7	X^2= 46.08, P<. 00005
Quantity of meat consumed per month	63.4	74.0	67.0	X^2= 46.44, P<. 00005
Quantity of fruits consumed per month	67.8	75.5	73.0	X^2= 22.21, P<. 00005
Quantity of dairy products consumed per month	55.8	55.6	60.6	X^2= 10.46, P<. 00005

Looking at regional variations, most of the households who had the quality or quantity of their food consumption reduced live in Gaza Strip. Food items mostly affected were fruits (79.9%) and then meat (72.3%), both of which are known to be expensive food items.

Table 4.20: Percentage of children's households that reduce quality and quantity of food by region

Reduction of food in quality and quantity	Region		Total	Pearson chi-square
	West Bank	Gaza Strip		
Quality of food	61.5	69.7	**64.7**	X^2= 29.51, P. 00005
Quantity of meat consumed per month	64.4	72.3	**67.5**	X^2= 23.96, P<. 00005
Quantity of fruits consumed per month	66.1	79.9	**71.5**	X^2= 74.44, P<. 00005
Quantity of dairy products consumed per month	50.4	67.1	**56.9**	X^2= 89.91, P<. 00005

An examination of the reduction of food by type of locality within regions revealed that urban and rural Gaza Strip suffered a much larger reduction in food consumption than urban and rural West Bank. Part of this might be due to the loss of income that was more severe in Gaza Strip than in the West Bank.

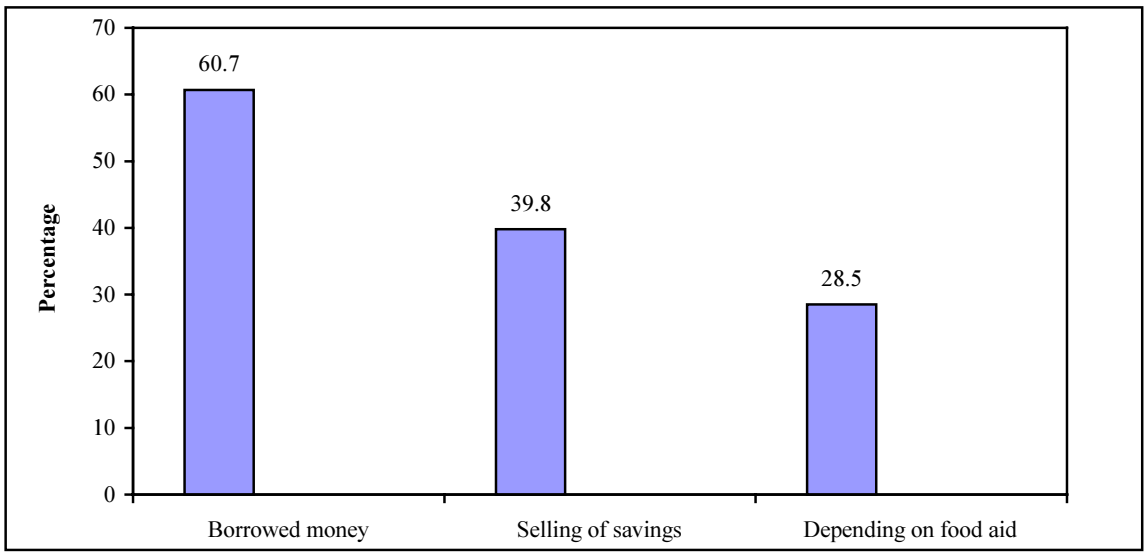
Table 4.21: Percentage of children's households that reduce quality and quantity of food by type of locality controlling for region

Region and Reduction in food consumption		Type of locality		
		Urban	Rural	Camps
West Bank				
Quality of food		51.7	68.7	63.9
Quantity of meat consumed per month		53.6	72.5	66.2
Quantity of fruits consumed per month		57.2	73.9	64.5
Quantity of dairy products consumed per month		44.6	52.8	56.5
Gaza Strip				
Quality of food		72.2	86.0	61.8
Quantity of meat consumed per month		73.1	87.1	67.4
Quantity of fruits consumed per month		78.6	90.0	79.9
Quantity of dairy products consumed per month		67.0	82.0	63.8
Person chi-square	Quality of food			X^2= 62.14, p<. 00005
	Quantity of meat consumed per month			X^2= 76.77, p<. 00005
	Quantity of fruits consumed per month			X^2= 52.21, p<. 00005
	Quantity of dairy products consumed per month			X^2= 18.90, p=. 001

4.2.4 Adapting to reduction in food intake:

Of the households who experienced a reduction in quantity or quality of food during the Intifada, more than half (60.7%) borrowed money, 39.8% sold savings and 28.5% depended on food aid.

Figure 4.3: Percentage of children's households that adapted with reduction of food by mode



Looking at type of locality, significantly more households from urban areas borrowed money (x^2= 19.24, p=.001) and more households from the camps became dependent on food aids (x^2= 125.55, p=<.00005), while fewer households from the rural areas sold assets (x^2 = 18.12, p=.001). This data indicates that households in rural areas were least likely to borrow money, sell savings or become dependent on food aid, possibly due to lack of these options.

Looking at regional variation, significantly more households from Gaza Strip borrowed money (x^2=15.54, p<.00005), sold assets (x^2= 59.09, p<.00005) and became dependent on food aid (x^2=122.96, p<.00005) than households from the West Bank. This is consistent with a higher percentage of households loosing their income in Gaza Strip than the West Bank, but again households living in rural areas in Gaza Strip were least able to use these coping measures.

4.2.5 Difficulties in obtaining health care for children during the Intifada:

A high 37.9% of households faced difficulties in obtaining health care for their children during the Intifada with rural areas experiencing significantly more difficulty than urban settings while camps were least affected. On the regional level, households living in the West Bank were significantly affected more than households in Gaza Strip.

Table 4.22: Percentage distribution of children's households that faced difficulties in obtaining health care by region and type of locality

Facing difficulties	Region*		Type of Locality**		
	West Bank	Gaza Strip	Urban	Rural	Camp
Faced difficulties	41.6	32.2	34.7	51.1	27.4
Do not face difficulties	52.6	64.9	61.2	43.4	68.2
Child do not require health care	5.8	2.9	4.1	5.5	4.4
Total	**100**	**100**	**100**	**100**	**100**

*X^2= 53.10, P<.00005
**X^2= 129.28, P<.00005

Causes of difficulties in obtaining health acre for children during the Intifada:
Examining causes of difficulty; the most common cause was siege (76.3%), followed by inability to pay (74.8%), and then curfew (42.4%). Other causes were related to the service itself – too far (38.8%), no medical personnel (37.8%) or no services available (31.4%).

Table 4.23: Percentage of children's households that faced difficulties in obtaining health care for children by causes

Causes	Percentage	Number of children
Siege	76.3	948
Curfew	42.4	526
Inability to afford cost	74.8	929
Service is not available	31.4	390
The service is far	38.8	482
Lack of accessible medical personal	37.8	470
Other	11.4	141

Difficulties in obtaining health care for children by type of locality controlling for region:
The West Bank and Gaza Strip suffered from different effects of the Israeli invasions and occupation, even at the level of type of locality within regions.
For example, siege affected the West Bank (91.7%) much more than Gaza Strip (45.3%), but between types of localities, rural West Bank (94.7%), and camps in Gaza Strip (67.6%) were mostly affected by siege.

Curfews were hardly imposed in Gaza Strip (1.9%), while the West Bank was badly affected (62.3%), as were the camps (72.7%).

Inability to pay for health care services affected households living in Gaza Strip (84.8%) more than in the West Bank (70.0%), but within the West Bank, the urban areas were mostly affected (76.2%), while in Gaza Strip rural areas suffered the most (90.9%).

Lack of health care services affected more households in the West Bank (41.3) compared to Gaza Strip (11.4%). Most commonly this was evident in rural West Bank (49.3%), while the camps in Gaza Strip had the lowest percentage of having no service (6.7%).

Distance away from the service affected households in the West Bank (45.8%) much more than Gaza Strip (24.8%), but rural Gaza Strip suffered the most (73.3%). Again, a lack of medical personnel affected households in the West Bank (47.4%) more than Gaza Strip (18.5%), but rural West Bank (56.1%) and rural Gaza Strip (25.0%) suffered the most within each region.

Table 4.24: Percentage of children's households that faced difficulties in obtaining health care by cause and type of locality controlling for region

Region and Causes	Type of locality			Pearson chi-square
	Urban	Rural	Camps	
West Bank				
Siege	88.1	94.7	87.3	X^2 = 12.49, p=.002
Curfew	53.6	64.6	72.7	X^2 = 14.33, p=.001
Inability to afford cost	76.2	66.5	70.9	X^2 = 7.34, p=.025
Service is not available	33.3	49.3	25.5	X^2 = 30.23, p<.00005
The service is far	48.2	48.0	30.9	X^2 = 11.31, p=.03
Lack of accessible medical personal	38.9	56.1	30.0	X^2 = 34.84, p<.00005
Gaza Strip				
Siege	37.8	36.4	67.6	X^2 = 28.50, p<.00005
Curfew	2.3	4.5	-	Not significant
Inability to afford cost	82.9	90.9	84.8	Not significant
Service is not available	13.7	9.1	6.7	Not significant
The service is far	21.8	73.3	11.4	X^2 = 68.28, p<.00005
Lack of accessible medical personal	18.7	25.0	15.2	Not significant

West Bank: x^2= 12.49, p=.002
Gaza Strip: x^2= 28.50, p<.00005

4.2.6 Difficulties in obtaining vaccination for children during the Intifada

It is clear that most of the children obtained their vaccinations at the appropriate time as only a small number of mothers expressed a delay in obtaining the vaccines. Causes for delay not related to the child or mother were due to Israeli check points (12.6%); lack of vaccines (12.3%); and lack of health personnel (8.8%).

Table 4.25: Percentage of children's mothers faced difficulties in obtaining vaccines for their children at the appropriate time by cause

Reasons	Percentage	Number of children
Israeli check points	12.6	301
Lack of vaccine	12.3	292
Lack of health personal	8.8	211
The child was sick	13.5	320
The mother was delayed for other reasons	5.3	125
Other	1.5	36

4.2.7 Accessibility to health care services:

Looking at accessibility to health care services, a health center was most accessible (83.3%), followed by a pharmacy (79.3%), and a doctor's clinic (75.3%). Hospitals were least accessible at 59.6%.

Accessibility within type of locality revealed that rural areas in general are least accessible to all services. This is probably reflected in better accessibility in Gaza Strip compared to the West Bank, due to larger rural areas in the West Bank.

Table 4.26: Percentage of children by accessibility to health centers and type of locality

Facility	Type of locality			Pearson chi-square
	Urban	Rural	Camp	
Hospital	68.0	34.7	75.4	X^2 = 384.35, P<0.00005
Health Center	89.0	68.8	91.0	X^2 = 218.85, P<0.00005
Doctor's clinic	81.3	67.8	73.5	X^2 = 60.14, P=.00005
Pharmacy	86.2	68.3	80.4	X^2 = 118.03, P=.00005

4.2.8 Accessibility to health care services by type of locality controlling for region;

Health centers and hospitals are more accessible in rural Gaza Strip (77% and 64.4% respectively) than rural West Bank (67.9% and 31.3% respectively), while doctors' clinics and pharmacies are more accessible in rural West Bank (69.7% and 69.7% respectively) than in rural Gaza Strip (51.5% and 56% respectively).

In terms of policy, this may suggest that more hospitals and health centers are needed in the rural areas of the West Bank.

Table 4.27: Percentage of children by accessibility to health care services and type of locality controlling for region

Type of health services	Type of locality			Pearson chi-square
	Urban	Rural	Camps	
West Bank*				
Hospital	59.6	31.3	82.4	X^2 = 298.62, p=.00005
Health center	85.5	67.9	88.8	X^2 = 102.44, p<.00005
Doctor's clinic	86.5	69.7	78.7	X^2 = 66.70, p<.00005
Pharmacy	88.5	69.7	87.9	X^2 = 106.98, p<.00005
Gaza Strip**				
Hospital	76.5	64.4	69.9	X^2 = 10.42, p=.005
Health center	92.6	77.0	92.5	X^2 = 28.03, p<.00005
Doctor's clinic	75.9	51.5	69.5	X^2 = 28.03, p<.00005
Pharmacy	84.0	56.0	74.4	X^2 = 47.76, p<.00005

Hospital: * x^2=298.62, p<.00005 ** x^2=10.42, p=.005
Health center: *: x^2=102.44, p<.00005 **: x^2=28.03, p<.00005
Doctor's clinic: *: x^2= 66.70, p<.00005 **: x^2= 28.03, p<.00005
Pharmacy: *: x^2= 106.98, p<.00005 **: x^2= 47.76, p<.00005

4.3 Maternal Characteristics

4.3.1 Age:

The data indicates that the median age of the mothers in the survey was 29 years. The recoded mothers' ages revealed that almost half (52.3%) of the mothers were below the age of 30 years. These results are compatible with expectations, as these are mothers of young children.

Table 4.28: Percentage distribution of children months by mother's age

Mother's age	Percentage	No. of children
15-29 years	52.3	1,757
30+ years	47.7	1,554
Total	**100**	**3,311**

4.3.2 Education:

As shown below, 12.4% of mothers were found to be illiterate, 60.4% had up to preparatory schooling (nine years of education), 16.6% had secondary schooling, and 10.6% had post-high school education.

Table 4.29: Percentage distribution of children by mother's education

Mother's education	Percentage	No. of children
No education	12.4	413
Elementary & Preparatory	60.4	2,005
Secondary	16.6	554
Higher education	10.6	346
Total	**100**	**3,318**

An examination of the education of mothers by type of locality and region showed that rural areas overall fare less well than other localities. As for regional variation, we find that the differences between the two regions appear to be strongest in the secondary education category, with a high of 23% of mothers from Gaza Strip having reached this level, compared to a considerably lower 12.7% for the West Bank.

As for education in the different types of localities within region, notice the high 16.2% and 16.8% illiteracy rate in the rural West Bank and rural Gaza Strip respectively, compared to 11.2% and 13.9% illiteracy rates in urban areas, and 6.6% and 8.1% illiteracy rates in refugee camps of the West Bank and Gaza Strip respectively. Higher education seems to follow a similar pattern, placing rural areas in both regions at a disadvantage, with rural Gaza women at a greater disadvantage than women in rural West Bank. These results are not surprising, in view of the accessibility problem women face in rural areas for education as well as health.

Table 4.30: Percentage distribution of children by mother's education and type of locality controlling for region

Mother's education	Type of locality			Total
	Urban	Rural	Camps	
West Bank*				
No education	11.2	16.2	6.6	**12.6**
Elementary & Preparatory	64.9	63.2	65.1	**64.1**
Secondary	11.4	12.1	17.1	**12.7**
Higher education	12.5	8.5	11.2	**10.6**
Gaza Strip**				
No education	13.9	16.8	8.1	**12.2**
Elementary & Preparatory	57.9	58.5	48.3	**54.6**
Secondary	19.6	18.8	29.6	**23.0**
Higher education	8.6	5.9	14.0	**10.2**
Total	**100**	**100**	**100**	**100**

*X^2 =33.514, P< 0.00005
**X^2 =37.728, P< 0.00005

This is in contrast to areas where UNRWA is present. In these areas, educational services are near by, placing women in refugee camps, in this instance, at an advantage, compared to rural ones.

4.3.3 Mother's work

It is not surprising to find that most women are house wives (93.3%), as all of them have young children. This did not seem to change with the Intifada.

Table 4.31: Percentage distribution of children by mother's employment status

Mother's employment status	Pre-Intifada	During Intifada
Employed (1-14 hrs)	0.6	1.0
Employed (15 hrs+)	4.4	4.2
Unemployed: ever worked	0.4	0.6
Unemployed: never worked	0.3	0.2
Full time student	0.6	0.4
House wife	93.7	93.5
Unable to work	0.0	0.0
Doesn't work: not seeking job	0.0	0.1
Total	**100**	**100**

4.3.4 Preferred health service:

The preferred health care services for seeking acute medical care for children were private clinics (42.7%), possibly due to the quality of care provided at these clinics, which are mainly run by specialists. This is followed by a lower preference for hospitals (17.3%), and then Government MCH clinics (16.8%) and least are UNRWA clinics (15.3%). Preference for NGO services were low at 7.1% which is possibly related to availability and it is good to find out that pharmacy and other sources are hardly sought after by mothers for their sick children.

Table 4.32: Percentage distribution of children by their mothers preference for health service

Type of service	Percentage
Govt. hospitals	17.3
Govt. MCH clinics	16.8
UNRWA clinics	15.3
Private clinics	42.7
NGO clinics	7.1
Pharmacy	0.7
Other	0.1
Total	**100**

Mothers living in the camps prefer UNRWA clinics (36.6%) for their sick children slightly more than private clinics (34.3%), while mothers living in rural and urban areas prefer private clinics (46.9% and 44.3% respectively) almost twice as much as Government services. This may be due to the accessibility of the UNRWA clinics for the camp residents and to the availability and affordability of private clinics to households living in the rural and urban areas.

On the regional level, MCH clinics run by UNRWA (28.5%) and the Government (21.7%) are more popular in Gaza Strip, while private health care is more popular in the West Bank (50.8%). This difference might reflect higher poverty levels in Gaza Strip compared to the West Bank.

It is also worth noting that regional variation shows that NGO services are more in demand in the West Bank (10.8%) than in Gaza Strip (1.2%), possibly due to their availability.

Table 4.33: Percentage distribution of children by preferred health service, type of locality and region

Type of service	Region*		Type of Locality**		
	West Bank	Gaza Strip	Urban	Rural	Camp
Govt. hospital	16.8	18.2	16.0	22.1	13.9
Govt. MCH clinic	13.7	21.7	21.6	17.2	7.2
UNRWA clinics	6.9	28.5	10.9	5.1	36.6
Private clinic	50.8	29.9	44.3	46.9	34.3
NGO clinic	10.8	1.2	6.4	7.5	7.6
Pharmacy	0.8	0.5	0.7	1.2	0.3
Others	0.2	-	0.2	-	0.1
Total	**100**	**100**	**100**	**100**	**100**

*X^2= 460.11, p=.00005
**X^2=431.15, P<.00005

4.3.5 Health education, knowledge and child feeding practice

Source of child nutrition education:
The commonest source of child nutritional information is the mass media (75.6%), followed by family members and friends (72.9%), while qualified medical staff makes up a lower percentage of providers of nutrition information at 43.8%. This reflects a failure of health education practices since all the services run by UNRWA, the Government and NGO clinics have a health education component.

Mother's knowledge about child nutrition:
When mothers were asked about the ages at which different foods should be given to children, most of them correctly said that Cerelac (90.2%) and rice cereal (82.1%) can be given between 4-6 months. This is perhaps a reflection of the influence of marketing on weaning practices, in addition to the other methods of acquiring knowledge regarding weaning.

At the same time, almost all of the mothers (91.0%) said that herbal drinks can be given to infants between the ages of 0-4 months. This is possibly influenced by the advice from family members because health professionals and the mass media do not routinely advocate this practice.
It was also interesting to observe that responses pertaining to when to introduce important foods such as meat/chicken/liver, bread, eggs and fruits into the children's diet, were often found inappropriate or covered a wide range of ages, suggesting perhaps a haphazard introduction of important foods into the infant diet.

As for the potentially problematic cultural habit of giving tea to children, 50.3% of mothers said they did not know when to give it, or that it should not be given, while 21% said it could be given at 12 months. This raises the issue of the need to address the tea chelating iron aspect of this habit, which causes iron deficiency anemia.

Causes of anemia:
Mother's knowledge about causes of anemia was moderate. Most of the mothers knew that anemia can be caused by drinking a lot of tea (93.4%), not eating green vegetables (82.6%), infection with parasites (80%), and not eating meat/chicken/liver (77.5%). But only 59.7% of mothers correctly said lack of eggs can cause anemia, and only 40.9% said that eating a lot of sweets cause anemia. With regards to the consumption of legumes, 57.1% said that a lack of it can cause anemia (in reality they have a good iron content, although its absorption can be influenced by other factors). As for milk, many mothers (79.6%) incorrectly thought milk has a high content of iron and lack of it can cause anemia.

Table 4.34: Percentage of children whose mothers know about causes of anemia by cause

Causes of anemia	Percentage
Not eating meat/chicken/liver	77.5
Not eating green vegetables	82.6
Not eating legumes	57.1
Drinking a lot of tea	93.4
Infection with parasites	80.0
Not eating eggs	59.7
Eating a lot of sweets	40.9
Not drinking milk	79.6

Prevention of anemia:
Mother's knowledge about prevention of anemia varied. Some scored correctly high as for example; suggesting that taking iron (93.6%), eating green vegetables (91.3%), and eating meat/chicken/liver (87.8%) can prevent anemia. Other questions had a moderate score as 76.7% of mothers said eggs can prevent anemia, which has a high iron content that is well absorbed. And incorrectly high scores were about milk and juices as 89.3% and 94.4% of mothers said they can prevent anemia although both drinks have low iron content.

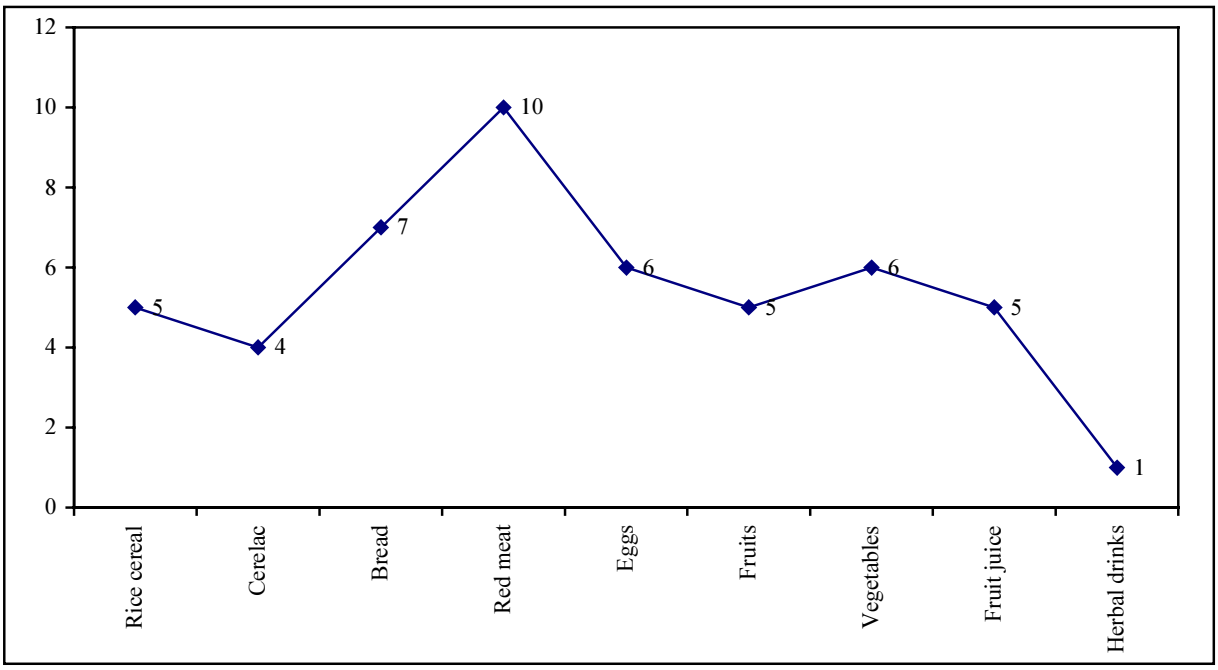
Table 4.35: Percentage of children whose mothers know about prevention of anemia by method

Methods for prevention of Anemia	Percentage
Eating meat/chicken/liver	87.8
Eating green vegetables	91.3
Eating eggs	76.7
Drinking juice	94.4
Taking iron	93.6
Drinking milk	89.3

Age of child in months at receiving certain food items:
Examining the mode (the commonest age) of giving different food items to infants by mothers, it was revealed that most of the food items were given to children at the correct age, except for two items. The first is herbal drinks that are given to infants by half of the mothers at one month of age, although this is not encouraged, unless the infant is suffering from colic or wind, as it should not replace milk. The second is meat/ chicken/liver, which is recommended to the infants at 6 month of age, yet half of the mothers give it at 10 months and most of the mothers give it at 12

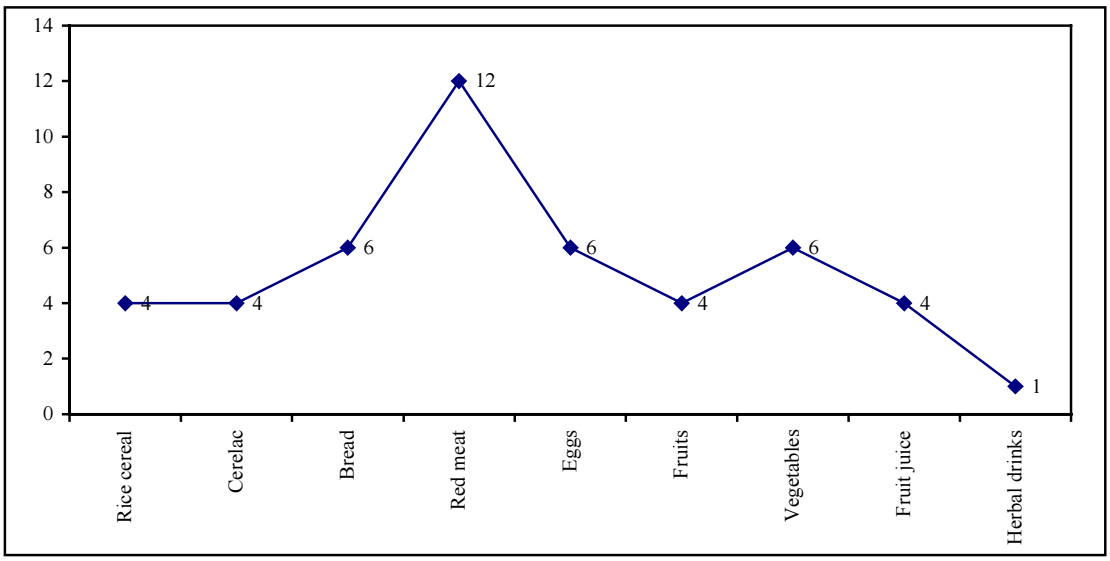
months. This practice is likely to result in anemia, as animal protein is the main source of dietary iron for infants older than 6 months.

Figure 4.4: Median of infants age in months at which infants were introduced to certain food



Looking at infants who had high levels of iron and protein in their diet in the first year of their lives, i.e. Cerelac, eggs and meat/chicken/liver, only 41.5% had a combination of such diet. This suggests that not only is an appropriate diet not introduced at the right time, but in half of the children, a high iron and protein diet, essential for child's growth, is not introduced at all.

Figure 4.5: Mode of infants age in months at which infants were introduced to certain food



4.4 Child Health

4.4.1 Age distribution:

The children in the survey, 6-59 months, were equally distributed between the different age groups, with 12 month intervals, except for 6-11 months containing a 6 month interval and half the number of children compared to other groups. Note half of the sample was males (50.9%).

Table 4.36: Percentage distribution of children by age and sex

Child's age and sex	Percentage	No. of children
Age		
6-11 months	11.5	383
12-23	22.7	755
24-35	22.1	735
36-47	21.6	723
48-59	22.1	735
Sex		
Males	50.9	1,694
Females	49.1	1,637
Total	**100**	**3,331**

4.4.2 Childbirth order:

The range of birth order of children is 0-17 with the commonest birth order at 3. Almost half of the children in the sample (59.4%) are from 0-4, 32.8% are from 5-8, and a small percentage of 7.8% are in the birth order of 9-17.

4.4.3 Spacing:

Almost one fifth (18.7%) of the children in the sample were born within 18 months of an older sibling, and one third (29.1%) have a younger sibling born within 18 months of their birth. Examining sex of children and birth order, there was no significant variation.

Table 4.37: Percentage distribution of children by spacing of the index child with the child born before and after

Spacing	Percentage
Spacing of the index child with the child born before	
18 months	18.7
More than 18 months	81.3
Total	**100**
Spacing of the index child with the child born after	
18 months	29.1
More than 18 months	70.9
Total	**100**

4.4.4 Chronic diseases:

Although the data is not validated by a medical source, 4 children have diabetes (0.1%), 19 have heart diseases (0.6%), 11 have epilepsy (0.3%) and 34 have congenital/inherited diseases (1%). Asthma of course is fairly prevalent, but varies widely in severity, so it is difficult to know the condition of the 98 children (3%), whose mothers said yes to the question on asthma.

Table 4.38: Percentage of children by chronic diseases

Disease	Percentage
Diabetes	0.1
Heart diseases	0.6
Asthma	3.0
Epilepsy	0.3
Congenital/inherited diseases	1.0
Other	1.7

4.4.5 Pre-term children:
A high percentage of children (15.0%) were born premature, and they were not found to vary by region, type of locality, age group or sex..

4.4.6 Low birth weight:
LBW has a prevalence of 12.2%. It does not vary by region or type of locality, but is significantly influenced by the sex of the child (15.2% for females vs. 9.4% for males). This may indicate that sex diagnosis in utero is harmful to the female infant because of households' preference for the male child. If this is confirmed, then in utero diagnosis of sex for social reasons should be banned.

Table 4.39: Percentage of low birth weight children aged 6-59 months by sex

Sex	Percentage	Number of children
Males	9.4	157
Females	15.2	248
Total	**12.2**	**405**

X^2= 26.41, p=<.00005

4.4.7 Serious acute illness in the last 2 weeks from interview:
Almost one third (30.7%) of children suffered from a serious illness within two weeks of the interview. This is fairly high, but seems to be affected by age group (x^2= 84.19, p=.00005) as younger children had more illness than older ones, which is expected.

4.4.8 Gastro intestinal parasites in the last 6 months from interview:
A high 17.7% of children suffered from parasitic infection in the last 6 months from interview. This diagnosis was not confirmed by a medical source. Children with parasitic infections were found to be significantly influenced by region, but not by type of locality or type of locality within region. This implies that parasitic infection is probably not related to the type of water delivery, sewage disposal or type of toilet as rural areas have the least amount of piped water and piped sewage. Yet children from rural areas do not have a higher percentage of parasitic infection compared to other types of localities.
Investigating the matter further, it is revealed that parasitic infection is significantly influenced by the socio-economic status of the family and mother's education, suggesting that children of households with a high socio-economic status (x^2= 22.31, p<.00005) or whose mothers have had a higher level education, (x^2= 48.18, p<.00005) have a lower percentage of parasitic infections.

Table 4.40: Percentage of children who suffered from parasitic infection by selected characteristics

Selected characteristics	Percentage	Number of children
Region*		
West Bank	14.0	285
Gaza Strip	23.5	304
Socio economic status**		
Low SES	19.2	500
High SES	12.5	89
Mother's education***		
None	19.1	79
Elementary and Preparatory	17.0	340
Secondary	24.1	135
Higher education	10.1	35
Palestinian Territory	**17.7**	**589**

*X^2= 49.89, p<.00005
**X^2= 22.31, p=.00005
***X^2= 48.18, p<.00005

4.4.9 Number of parasitic infection in the previous 6 months:

Of those children who had parasitic infection (17.7% of the total), almost one third (38.6%) had it once, and 56.7% had it 2-6 times.

4.4.10 Vitamins

Vitamin A&D:

This vitamin is normally given to infants from birth and until 12 months of age by government clinics only. Almost half of the children (49%) took vitamins A&D, with 60.9% of children taking it for up to 11 months, 8.6% still taking it, 4.3% don't know, and the rest took it for more than 12 months.

Vitamin A&D intake varied significantly with type of locality, with the least intake in infants living in the camps (43.0%), as UNRWA does not provide it routinely, and the highest intake was by infants living in rural areas (54.6%).

This variation in type of locality is reflected on the regional level with 25.9% of infants living in Gaza Strip taking vitamin A&D, compared to 63.8% of infants living in the West Bank.

Table 4.41: Percentage of children who received vitamin A&D by region and type of locality

Region and Type of locality	Percentage	Number of children
Region*		
West Bank	63.8	1,295
Gaza Strip	25.9	336
Type of Locality**		
Urban	48.4	732
Rural	54.6	558
Camp	43.0	341
Palestinian Territory	**49.0**	**1,631**

*X^2= 456.22, p<.00005
**X^2= 27.83, p<.00005

4.4.11 Iron:

All MCH clinics measure the hemoglobin level of children during their first year. Government clinics give iron prophylactically at 6 months, and then test hemoglobin levels between 9-12 months to increase the dose if the child is anemic or leave it if the child's hemoglobin is normal. UNRWA clinics also provide iron to all children at 6 months of age, and examine the hemoglobin at 12 months in order to evaluate the dose. These policies, although implemented, have many pit holes beyond the scope of this report, rendering these polices ineffective.
Overall, the survey results showed that 36.3% of children took or still taking iron.

4.4.12 Iron intake by type of locality and region:

There are significantly more children on iron living in the camps than children living in rural or urban settings. This is reflected on a regional level with more children on iron living in Gaza Strip than those living in the West Bank.

Table 4.42: Percentage of children who received iron by region and type of locality

Region and Type of locality	Percentage	Number of children
Region*		
West Bank	34.1	692
Gaza Strip	39.6	514
Type of Locality**		
Urban	32.8	496
Rural	32.8	335
Camp	47.2	375
Palestinian Territory	**36.3**	**1,206**

*X^2= 10.92, p=.004 **X^2= 57.55, p<.00005

4.4.13 Multi vitamins:

Multivitamins are normally prescribed by private physicians, and they are not part of UNRWA or Government policies.

The survey showed a small percentage (5.6%) of children took or were taking multivitamins.

4.4.14 Multi vitamins intake by type of locality and region:

There are no variations in multivitamin intake by children and type of locality or region, reflecting a random and a smaller practice of prescribing such vitamins, compared to the routinely given vitamin A&D and iron.

4.4.15 Milk intake

Breast feeding:

A high percentage - 95.8% of children were breast fed. Half of the children were breast fed for 14 months, and 16.3% were still breast feeding at the time of the survey.

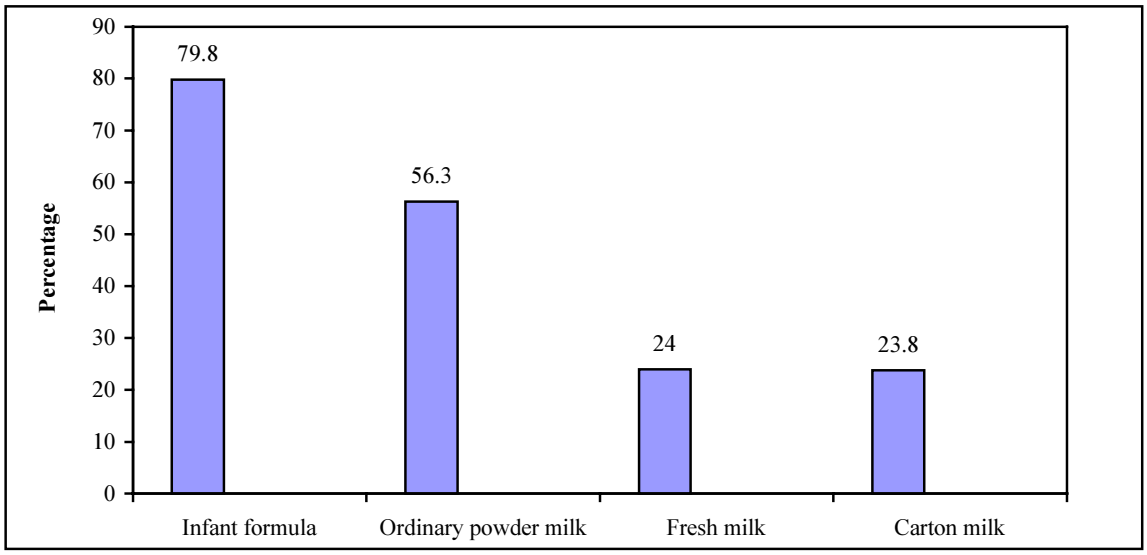
Other milk:

Almost half (56%) of the mothers used other milk, with 17.5% introducing it at the first month of age while half of the mothers introduced it at 3 months.

Type of other milk:

A high percentage of mothers (79.8%) gave their children infant formula, while 56.3% gave ordinary powder milk, and almost a quarter each gave fresh milk or carton milk .

Figure 4.6: Percentage of children who received other types of milk rather than mother milk



There is no sex difference in children given infant formula, which is the most expensive type of milk. More infant formula is used in Gaza Strip (x^2=11.75, p=.001) and the camps, (x^2=12.43, p=.002), followed by urban areas, and then rural areas.

4.4.16 Weaning food

Of the total number of mothers, only 31.6% reported introducing meat/chicken/fish (foods rich in protein and iron) into their child's diet by the age of eight months, and only 69.7% by the age of one year. Eggs were reported as having been introduced by 72.1% of mothers by age eight months, and by 90.4% of mothers by the age of one year. A high protein ready-made weaning food, notably Cerelac, is introduced by 60.7% of mothers by the age of eight months, and 61.9% by the age of one year. Rice/Corn-flour is introduced by 57.1 of mothers by the age of eight months, and 60.2% by the age of one year. These results indicate that the age of introducing foods essential for normal growth of children is delayed, in comparison with what the WHO[1] and the American Academy of Pediatrics (AAP)[2] recommend, which is the age of 6 months for introducing all the above except for egg white.

Table 4.43: Percentage of children who given food by age of Introduction and type of food

Age of introduction	Type of food						
	Eggs	Family food	Fruits	Vegetables	Meat/ Chicken/fish	Cerelac	Rice/ Cornflour
8 months	72.1	51.5	82.1	74.4	31.6	60.7	57.1
12 months	90.4	86.5	89.6	86.9	69.7	61.9	60.2

Child feeding:

Looking at food consumption among children one year of age or older (current reported food ingestion among children in the post-weaning stage), we found that children's diets in the post-weaning stage are problematic. Our analysis indicates that these children's current diets are protein and iron deficient: 93.2% consume rice/wheat frequently, 93.1% consume vegetables without green leaves, 85.3% consume eggs, a low of 44% consume legumes, 38.5% consume chicken, 35.1% consume fresh red meat, and a very low of 13.6% consume liver.

Very few children consume adequate amounts of fish, although 42.6% and 52.8% eat small amounts of fresh or frozen fish respectively. Surprisingly, 10.3% of children do not consume milk or dairy products at all and 24.6% consume red meat once every two to three weeks or less. These results seem to indicate that the diet of children in this sample is deficient in animal and plant protein, except for what is contained in eggs, while iron intake is probably adequate in one-third of children who frequently consume meat, green vegetables and legumes. As food quantity was not measured in this survey, these results should be interpreted with caution.

[1] WHO 2000-2002. Home page: Nutrition-Infant and Young Child- Complementary Feeding.

[2] Nelson Textbook of Pediatrics, 16th edition, 2000. (edited by) RE Berhman, RM Kliegman, HB Jenson. Saunders USA. P.166.

Table 4.44: Percentage distribution of children aged 12-59 months eating certain food by type and categories of intake

Type of food	Category of intake			Total
	No intake	Some intake	Frequent intake	
Eggs	5.5	9.2	85.3	100
Milk products	10.3	12.6	77.0	100
Fresh red meat	24.6	40.3	35.1	100
Frozen meat	69.5	9.6	21.0	100
Liver	29.0	57.4	13.6	100
Chicken	12.3	49.2	38.5	100
Legumes	6.9	49.0	44.0	100
Green Vegetables	8.8	54.8	36.4	100
Other vegetables	4.0	2.9	93.1	100
Fresh fruits	6.8	37.4	55.8	100
Rice/wheat/pasta	2.9	3.9	93.2	100
Sweets	(Low intake) 12.9	(High intake) 87.1		
Fresh fish	(No intake) 57.4	(Any intake) 42.6		
Frozen fish	(No intake) 47.2	(Any intake) 52.8		

4.4.17 Tea consumption:

A high percentage of children consume tea (69.8%) with 50.2% always consuming tea with meals and 39.6% consume tea with meals sometimes.

Table 4.45: Percentage distribution of children who drink tea with meals or straight after meals

Drink tea	Percentage	No. of children
Always	50.2	1,166
Sometimes	39.6	919
No	10.2	236
Total	**100**	**2,321**

The range of drinking tea is 1-20 times a day with 40.3% of children drinking it once a day, 45.7% drinking it 2-3 times and 12.7% drinking it 4-20 times a day. The rest did not know.

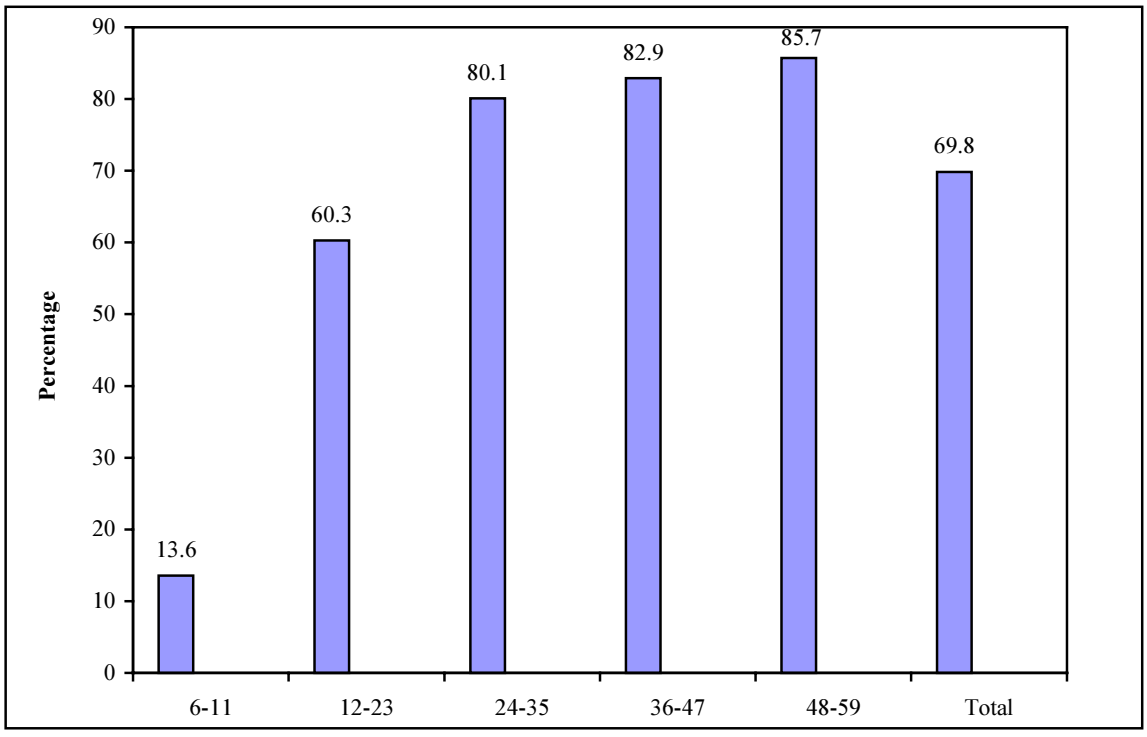
Table 4.46: Percentage distribution of children who drink tea by number of times

Number of times	Percentage	No. of children
0	0.2	4
1	40.3	936
2	26.9	623
3	18.8	435
4	7.4	171
5+	5.3	125
DK	1.2	27
Total	**100**	**2,321**

Tea drinking by type of locality and region:
Fewer children drink tea in the camps compared to the rural and urban settings (x^2=6.10, p=.047), and more children drink tea in Gaza Strip compared to the West Bank (x^2=7.30, p=.007).

Tea drinking and age groups:
Looking at tea drinking and age groups of children, 13.6% of infants drink tea at age 6-11 months, which increases to 60.3% for children 1-2 years, and reaches a plateau of around 80% thereafter.

Figure 4.7: Percentage of children who drink tea by age groups



X^2=790.30, p<.00005

4.4.18 Mother's perception of the child's size:

Mother's perception of the child's size depends on comparing her child with other children. Usually it is a good indicator in screening short or thin children. In this case, 26.5% of the mothers thought their children were thin, while 12.6% thought their children were short. No sex preference by mothers was identified between short or thin children.

Of the mothers who thought that their children were thin or short, most of them (44.2%) seeked consultation from a health professional and 8.6% from a nutritionist.

Table 4.47: Percentage of children whose mothers seeked consultation for their children by source

Consultation source	Percentage
Health professional	44.2
Nutritionist	8.6
Other	10.5

4.4.19 Anemia

A small percentage (0.2%) of children have severe anemia (less than 7 mg/dl), 15.3% have moderate anemia (7-9.9 mg/dl), and 22.4% have mild anemia (10-10.9 mg/dl). A total of 37.9% of children have anemia below 11mg/dl.

Table 4.48: Percentage distribution of children by hemoglobin level

Hemoglobin level	Percentage	No. of children
Less than 7	0.2	6
7 - 9.9	15.3	497
10 – 10.9	22.4	731
11 and more	62.1	2,023
Total	**100**	**3,257**

Anemia and sex of the child:

There is no sex difference in children with anemia.

Anemia by type of locality and region:

There is marginally more moderate anemia in the camps compared to other types of localities, despite having more iron prescribed in the camps, and more moderate and mild anemia in Gaza Strip compared to the West Bank.

Table 4.49: Percentage distribution of children by Hemoglobin level, region and type of locality

Hemoglobin level	Region*		Type of locality**			No. of children
	West Bank	Gaza Strip	Urban	Rural	Camp	
Less than 7	0.3	0.0	0.1	0.4	0.1	6
7 - 9.9	14.2	17.0	15.7	14.5	15.4	497
10 – 10.9	21.0	24.6	21.1	21.4	26.3	731
11 and more	64.5	58.4	63.1	63.6	58.2	2,023
Total	**100**	**100**	**100**	**100**	**100**	**3,257**

*X^2=17.156, p=.001
**X^2= 13.831, p=.032

Anemia and age groups of children:
Anemia drops gradually with increasing age of children, with the exception of sever anemia-commonest in the second year of life.

Table 4.50: Percentage distribution of children by Hemoglobin level and age groups

Age group (months)	Hemoglobin level				Total	No. of children
	Less than 7	7 – 9.9	10 – 10.9	11 and more		
6-11	0.2	27.8	31.3	40.7	100	**508**
12-23	0.4	21.5	26.3	51.8	100	**767**
24-35	0.0	12.2	23.3	64.5	100	**731**
36-47	0.0	9.9	18.6	71.5	100	**716**
48-59	0.2	6.0	12.6	81.2	100	**531**
Total	**0.2**	**15.3**	**22.4**	**62.1**	**100**	**3,253**

x^2= 267.266, p<.00005

4.4.20 Growth parameters:

A small percentage of children (3.5%) are thin, while a moderate percentage are short (9%), and a smaller percentage (2.5%) are wasted.

Table 4.51: Percentage of children by anthropometrical indexes

Anthropometrical indexes	Percentage	No. of children
Stunting	9.0	299
Wasting	2.5	85
Underweight	3.5	115

Growth parameters by sex of the child:
There is no sex variation between stunted, wasted or thin children.

Growth parameters by type of locality and region:
An examination of type of locality and growth parameters, revealed that rural areas have the highest percentage of thin (6.2%), stunted (10.9%) and wasted children (4.6%).
Thin (2.2%) and wasted (1.5%) children are least in urban areas, while stunted children (7.0%) are least in the camps.

Table 4.52: Percentage distribution of malnourished children by type of locality

Undernourished	Type of locality			Person chi-square
	Urban	Rural	Camp	
Weight for age (underweight)	2.2	6.2	2.4	X^2= 32.49, p<.00005
Height for age (stunted)	8.6	10.9	7.0	X^2= 8.81, p=.012
Weight for height (wasted)	1.5	4.6	1.9	X^2= 26.16, p<.00005

Looking at growth parameters and region; there are more thin children in the West Bank as expected due to the large rural areas present, but surprisingly there are more stunted children in Gaza Strip, compared to the West Bank, with no regional variation in wasted children.

Table 4.53: Percentage of children by anthropometrical index and region

Anthropometrical index	Region		Person chi-square
	West Bank	Gaza Strip	
Weight for age (underweight)	4.0	2.6	X^2= 4.40, p=.021
Height for age (stunted)	8.0	10.5	X^2= 5.94, p=.009

Stunting and type of locality controlling for region:
Stunting is higher in all types of localities in Gaza Strip compared to localities in the West Bank, particularly urban (11.1 vs. 6.2%) and rural (18.7% vs. 10.2%) settings, with least difference in the camps (7.5% vs. 6.5%). This may suggest that poverty has a big impact on children's growth, which is worse in rural than urban settings, and in Gaza Strip than the West Bank, while the

children in the camp are possibly protected through accessible health services and social aid from UNRWA.

Table 4.54: Percentage of stunted children by type of locality controlling for region

Region	Type of locality		
	Urban	Rural	Camp
West Bank	6.2	10.2	6.5
Gaza Strip	11.1	18.7	7.5
Total	**8.6**	**11.0**	**7.1**

X^2= 11.04, p=.004

Wasting and under weight on the other hand have low percentages, which made it difficult to look at variation in the different types of localities within regions, as the numbers were very small for conclusive results.

4.5 Analysis:

In this section, the main indicators of anemia and growth parameters will be analyzed to determine factors influencing their prevalence. These are; socio-economic and demographic variables of the family; the effect of occupation and invasions; socio-economic variables of the mother, and finally child variables such as low birth weight and chronic diseases.

4.5.1 Anemia in children 12-59 months

Anemia below 11 mg/dl in children from 6-59 months is influenced by many factors. During infancy (up to 12 months) it is affected by breast feeding, weaning practice, and prophylactic supplementation of iron. In addition, the hemoglobin level can reach a minimum of 10.5 mg/dl at 6 months of age according to international literature, and is considered normal. After the age of 12 months, the hemoglobin level is influenced mainly by feeding practice, and anemia then is considered any value below 11 mg/dl. Therefore, due to the variation in factors affecting anemia in children less than one year and those older than one year, the analysis will address children above one year of age. In this case, anemia will be considered any value below 11 mg/dl, without looking at degrees of anemia. Consequently, anemia in children 12-59 months is higher in Gaza Strip (38.7%) compared to the West Bank (33.5%), (x^2= 8.06, p=.005), and is highest in the camps at 40.1% compared to rural areas (34.0%) or urban areas (34.2%), (x^2= 8.20, p=.017).

4.5.1.1 Socio demographic variables

None of the socio demographic variables, except for the main source of income, influenced anemia. This included: type of dwelling; crowding; economic status of the family based on durable goods; source of drinking water; type of sewage and toilet facilities; and households who farmed their home garden or bred animals.

4.5.1.2 Effect of the Israeli measures during the Intifada

Difficulty in obtaining food: change of food consumption and difficulty in accessing health services had no significant effect on childhood anemia.

4.5.1.3 Mothers

Anemia was not found to be influenced by a mother's education, work or age.

4.5.1.4 Children

Anemia in children is not affected by low birth weight, pre-term birth, children with chronic disease or with gastro-intestinal parasitic infection. However, it is affected by rank of the child and spacing between children.

Anemia and rank of the child:

Children of a lower rank, i.e. the second or first child have significantly less anemia than the third, fourth ….child.

Table 4.55: Percentage of anemic children aged 12-59 months by rank of the child

Rank of the child	Anemic	No. of children
3 or more	37.1	2021
2 or less	31.8	868
Total	**35.5**	**2,889**

X^2=7.34, p=0.007

Anemia and spacing of the child:

An investigation of anemia and spacing revealed that a middle child born within 18 months of an older and a younger sibling will have significant anemia compared to other children.

Table 4.56: Percentage of anemic children aged 12-59 months by spacing with the child after, controlling for spacing of 18 months with the child before

Spacing period	Anemic	No. of children
Up to 18 months	43.4	83
More than 18 months	25.9	174
Total	**31.5**	**257**

X^2= 7.98, p=.005

Other variables not affecting anemia were: multi vitamin supplementation; those who used other milk for feeding their infants; or age at introducing other milk (less than 6 months or more than 6 months).

Anemia and diet:
Anemia was not significantly influenced by any intake of liver, meat, eggs and fish (frozen or fresh). This may be due to lack of a quantitative measure of these items in the analysis.
The same lack of significance with anemia was observed for high intake of sweets, legumes, green leafy vegetables or other vegetables and fruits. This may relate to the quantity consumed, poor iron content in some of these food items or due to poor iron absorption.

Anemia and iron intake:
Surprisingly there are more anemic children on iron than not.

Table 4.57: Percentage of anemic children aged 12-59 months by iron intake status

Iron intake status	Anemic	No. of children
Takes iron	39.4	1,053
Does not take iron	33.2	1,818
DK	38.9	18
Total	**35.5**	**2,889**

X^2=11.44, p=.003

Anemia and tea drinking:
It was found that children who drink tea were less anemic. This relationship probably exists because older children drink more tea and they have fewer anemia, i.e. age is a confounding factor. Therefore, once age of children was controlled for, tea drinking became insignificant in influencing anemia in children 24-35 months. This effect of tea is hard to explain, especially as tea drinking should not affect anemia in children who are on a non-vegetarian diet.

Table 4.58: Percentage of anemic children aged 12-59 months by drinking tea, and age

Age of child	Drinking tea	Anemic	No. of children
12-23	Drinks	52.0	452
	Does not drink	55.9	290
24-35	Drinks	38.8	583
	Does not drink	33.1	145
36-47	Drinks	30.0	583
	Does not drink	32.0	122
48-59	Drinks	18.4	615
	Does not drink	27.6	98
Total		**35.5**	**2,889**

48-59 months: X^2=4.51, p=.034 all other age groups not significant

Anemia and chicken intake:
Chicken consumption was the only food item in this survey that influenced anemia, where an intake of once a week or more significantly reduced the percentage of anemia in children.

Table 4.59: Percentage of anemic children aged 12-59 months by chicken intake

Iron intake	Anemic	No. of children
Inadequate intake	45.0	535
Once a week	35.2	1,172
More than once a week	31.4	1,178
Total	**35.5**	**2,885**

X^2=29.97, p<.00005

4.5.2 Growth of children 6 – 59 months

The analysis of wasting and thin children was limited because of the small percentage of these two variables, but certainly an attempt was made wherever possible. Stunting on the other hand was addressed thoroughly, as the percentage was high enough to allow such analysis.

4.5.2.1 Socio demographic variables

Type of dwelling, source of water, sewage disposal and type of toilet had an effect on child growth. As for households who farmed their home garden or bred animals, the numbers were too small to analyze for conclusive results.
The rest of the socio demographic variables significantly influenced at least one parameter of child's growth as follows -

Socioeconomic status:
Stunting (height for age) in children was significantly less in households of high socio-economic status (6.1%) compared to children in households of low socio-economic status (9.8%).

Table 4.60: Percentage of stunted children by household's socioeconomic status

Socioeconomic status	Stunting	No. of children
Low SES	9.8	2,608
High SES	6.1	723
Total	**9.0**	**3,331**

X^2= 9.44, p=.002

Crowding:
There are significantly less wasted (weight for height) and more stunted (height for age) children in crowded households. This may suggest that eating patterns for children aged 6-59 months in large households, where the extended family or older siblings help in taking care of younger ones, has two faces: one is that children tend to eat better in terms of adequate calories to

maintain their weight, but eat less quality food containing protein to maintain their height due to poverty.

Table 4.61: Percentage of stunted and wasted children by house density

Growth Parameters	Lower house density	Higher house density	No. of children
Stunting*	7.5	10.2	286
Wasted**	3.6	1.8	83

*X^2= 6.80, p=.009
**X^2= 9.63, p=.002

Household income:
Family income influenced wasting (weight for height), although the results need to be looked at with caution due to the small numbers in the different categories. The maximum wasting is in households who have no income (4.8%) and those who work in Israel (4.3%), compared to the national level of 2.5%. The lowest percentage (1.4%) is in children whose households work in the private sector.

Table 4.62: Percentage of wasted children by source of income

Source of income	Wasted	No. of children
Farming and fishing	0.0	182
Household projects	2.7	514
Govt. employees	1.9	626
Private sector employees	1.4	733
Workers in Israel	4.3	322
Internal remittance	0.0	22
Remittance from abroad	3.0	33
Social welfare	2.8	217
UNRWA employees	0.0	60
Others	3.4	119
No income	4.8	503
Total	**2.5**	**3,331**

X^2= 26.67, p=.003

4.5.2.2 The effect of the Israeli measures during the Intifada

Child growth did not seem to be affected by difficulty in obtaining food or difficulty in obtaining health services, but changes in quality and quantity of food consumption did. Stunting occurred in 10.1% of households who had a change in food consumption compared to 7.8% of those who

did not. This suggests that an adequate caloric supply was available, but good quality food (which is more expensive) to maintain height was not.

Table 4.63: Percentage of stunted children by changes of food consumption

Food consumption	Stunted	No. of children
No change	7.8	1,671
Decreased	10.1	1,660
Total	**9.0**	**3,331**

X^2= 5.32, p=. 021

4.5.2.3 Mothers

Mother's work during the Intifada had no influence on the child's growth. While mother's age influenced thinness (weight for age) and wasting (weight for height), the effect was not conclusive because of the small number of children in the different categories and because of other confounding variables that are affected by a mother's age such as rank of child and mother's education, both of which were difficult to control for, due to numbers limitation.
Mother's education, on the other hand, significantly affected child's growth; with illiterate mothers having the highest percentage of thin (7%) and stunted children (17.4%).

Table 4.64: Percentage of children by education of the mother and child's growth

Mother's education	Thinness	Wasted	Stunted	No. of children
None	7.0	2.4	17.4	413
Elementary and preparatory	3.5	3.2	7.9	2,006
Secondary	1.8	1.3	8.5	554
Higher education	1.4	1.2	6.1	346
Total	**3.5**	**2.5**	**9.0**	**3,319**

Weight for age: X^2=24.60, p<.00005
Weight for height:x^2=9.72, p=.021
Height for age: x^2=42.87, p<.00005

Looking at a mother's perception of the child's size in relation to the actual size, we found that a mother's perception is significantly correct in detecting short and thin children.

Table 4.65: Percentage of stunted and underweight children by mother's perception of short and thin children

Mother's perception	Stunted*	Underweight**
Yes	19.5	7.8
No	7.5	1.9
DK	0.0	0.0
Total	**9.0**	**3.5**

*X^2=65.60, p<.00005
**X^2=68.71, p<.00005

Spacing:
Growth in children was not affected by short spacing with the child before, or short spacing with the child after, but combining both, i.e. a middle child who has an older and a younger sibling born within 18 months from his/her birth, made stunting border line significant.

Table 4.66: Percentage of stunted children by spacing with the child born after in children born within 18 months of a previous sibling

Spacing period	Stunted	No. of children
Up to 18 months	18.1	83
More than 18 months	9.6	178
Total	**12.3**	**261**

X^2= 3.82, p=.051

Growth of children and chronic illness:
Children with chronic diseases seem to be more stunted (height for age) and thinner (weight for age) than other children of a similar age.

Table 4.67: Percentage of stunted children by health status

Child health status	Stunted	Not stunted
Have chronic disease	11.5	566
Healthy	8.5	2,765
Total	**9.0**	**3,331**

X^2= 5.26, p=.002

Table 4.68: Percentage of underweight children by health status

Child health status	Underweight	No. of children
Have chronic disease	5.0	565
Healthy	3.1	2,766
Total	**3.5**	**3,331**

X^2= 4.61, p=.032

Growth and birth weight:
Children born less than 2.5kg i.e. a low birth weight, tend to be more stunted than children of normal weight. But surprisingly, their weight is within normal for age and height.

Table 4.69: Percentage of stunted children by weight at birth

Child weight at birth	Stunted	No. of children
Less than 2.5 kgs	12.6	501
Normal	8.4	2,825
Total	**9.0**	**3,326**

X^2= 9.36, p=. 009

Growth and children with parasitic infection:
Children with at least 2 parasitic infections in the 6 months preceding the survey were shorter (14.2% vs. 8.3%) and thinner (5.6% vs. 3.2%) than those with one infection or less in the 6 months preceding the survey. This suggests that parasitic infections can significantly affect a child's growth.

Table 4.70: Percentage distribution of stunted and underweight children by parasitic infection in the last 6 months preceding the survey

Parasitic infection	Stunted*	Underweight**	No. of children
Infected 2 or more times in 6 months	14.2	5.6	374
Not infected	8.3	3.2	2,957
Total	**9.0**	**3.5**	**3,331**

*X^2= 13.93, p<.00005
**X^2= 5.97, p=.015

Growth and rank of the child:
Children who are first or second born in the family, i.e. lower rank, have less stunting but more wasting than those who are third or more, suggesting less quality of food is distributed around when 3 or more children are present in the family. This finding is exactly similar to crowding, where children are less stunted but more wasted when living in a crowded household.

Table 4.71: Percentage of stunted and wasted children by rank of the child

Rank of child	Stunted*	Wasted**	No. of children
3 or more	9.7	2.2	2,322
2 or less	7.3	3.4	1,003
Total	**9.0**	**2.5**	**3,325**

*X^2= 4.99, p=.025

**X^2= 3.99, p=.046

4.5.2.4 Child's diet:

The consumption of multivitamins, fruits, non-green vegetables, sweets, and eggs made no difference to a child's growth.
Other dietary variables that significantly influenced growth were:

1. Iron supplementation:

It was found in a previous table that children on iron are significantly more anemic, and here we find that children on iron are significantly more wasted (weight for height). This is consistent with the fact that anemic children have a poor appetite and therefore poor weight gain.

Table 4.72: Percentage of wasted children by iron supplementation

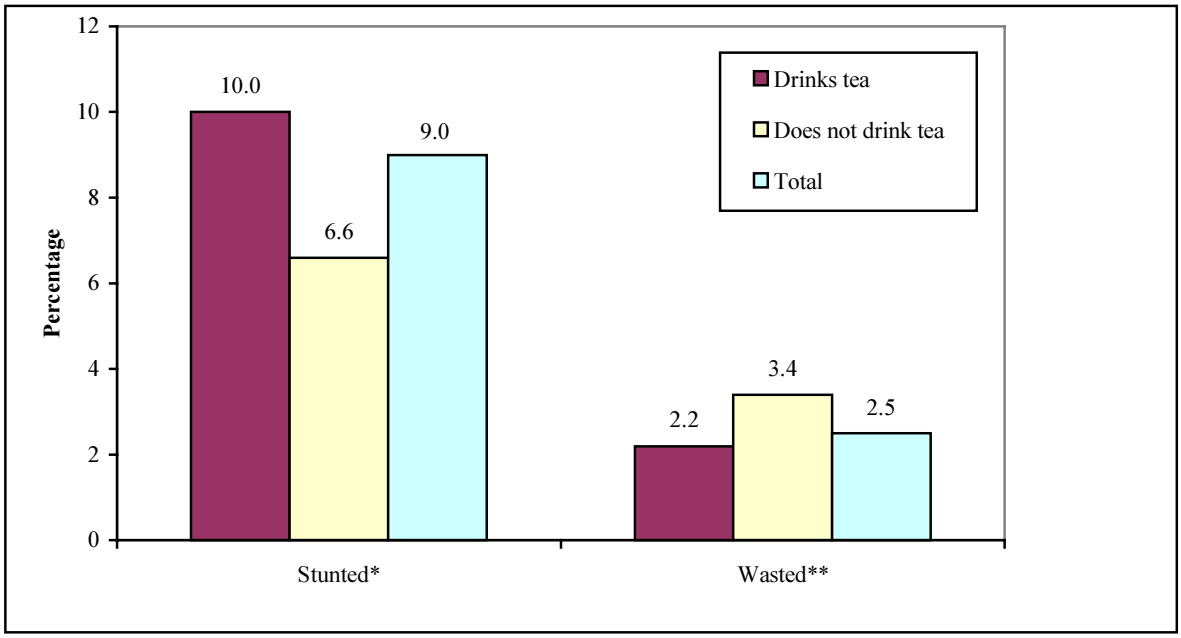
Receiving iron	Wasted	No. of children
Received	3.7	1,206
Did not receive	1.9	2,101
DK	0.0	19
Total	**2.5**	**3,326**

X^2= 10.77, p=.005

2. Tea:

Children who drink tea tend to be less wasted than those who do not, but they are significantly more stunted. This suggests that the food consumed by children who drink tea is of adequate calories to maintain weight but not of good enough quality to maintain height i.e. poor in protein, suggesting poverty or poor dietary habits.

Figure 4.8: Percentage of stunted and wasted children by tea drinking



*X^2= 3.96, p=.046
**X^2= 10.10, p=.001

3. Plant protein:
There are more stunted children who consume plant protein such as lentils, chickpeas and others once a week or more than those children who consume it less than once a week. It is difficult to interpret such results because we are unaware of the quantity and quality of food consumed, and other confounders to plant protein consumption such as income, social class and others. However, it might be that children of poorer households consume more of plant protein because of the lower cost compared to animal protein.

Table 4.73: Percentage of stunted children by plant protein intake

Intake of plant protein	Stunted	No. of children
Once a week or more	9.7	2,472
Less than once a week	6.9	849
Total	**9.0**	**3,321**

X^2=5.72, p=.017

4. Liver:
Children, who consume liver once a week or more, tend to be less thin than those who consume liver less than once a week. This may suggest that children who consume liver, which is high in iron, are less anemic, and so consequently have better appetites.

Table 4.74: Percentage of thin children by liver intake

Intake of liver	Thin	No. of children
Once a week or more	2.6	1,319
Less than once a week	4.0	2,005
Total	**3.5**	**3,324**

X^2=5.09, p=.024

5. Milk product:

There are less stunted children in those who consume milk products 2-3 times a week or more, compared to children who do not. This is influenced by the high protein content of the milk.

Table 4.75: Percentage of stunted children by intake of milk products

Intake of milk products	Stunted	No. of children
2-3 times a week or more	8.4	2,562
Once a week or less	11.0	764
Total	**9.0**	**3,326**

X^2=4.87, p=.027

6. Green vegetables:

There are fewer thin children in those who consume green vegetables compared to those who do not; this is similar to liver consumption, which may relate to the high iron content in these food items, contributing to lower percentages of anemia in theory and a better appetite. This has in turn reduced wasting, i.e. improved weight for height, due again to a better weight gain.

Table 4.76: Percentage of thin children by intake of green vegetables

Intake of green vegetables	Thin	No. of children
Any take	3.2	3,028
No take	5.8	291
Total	**3.5**	**3,319**

X^2=5.38, p=.020

Table 4.77: Percentage of wasted children by intake of green vegetables

Intake of green vegetables	Wasted	No. of children
Any take	2.2	3,028
No take	5.8	291
Total	**2.5**	**3,319**

X^2= 13.75, p<.00005

7. Meat:

There is significantly less wasting in children who consume meat at least once a week. As meat has high iron and protein content, one expects it to influence thin (weight for age) and stunted (height for age) children, but it did not. Consequently, it is difficult to interpret the results, possibly because the quantity of intake is not measured.

Table 4.78: Percentage of wasted children by intake of meat

Intake of green vegetables	Wasted	No. of children
Once a week or more	1.6	1,969
Less than once a week	3.9	1,352
Total	**2.5**	**3,321**

X^2= 16.92, p<. 00005

8. Chicken:

There is less wasting in children who consume chicken at least once a week compared to those who do not. Since chicken has the same high iron and protein content as red meat, one can only apply to chicken intake the same interpretation as meat, i.e. lack of quantitative data limits the analysis.

Table 4.79: Percentage of wasted children by chicken intake

Intake of chicken	Wasted	No. of children
Once a week or more	1.9	2,544
Less than once a week	4.8	774
Total	**2.5**	**3,318**

X^2= 19.90, p<.00005

9. Fish:

There are fewer wasted and thin children in those who eat any amount of frozen fish compared to those who do not. Similarly, there are less thin children in those who eat any amount of fresh fish compared to those who do not.

Fish is known to be rich in protein and essential oils. The effect it has on growth is again difficult to interpret, but one can conclude that frozen fish is as important as fresh fish for a child's growth, and should probably be encouraged due to its low cost.

Table 4.80: Percentage of wasted children by intake of frozen fish

Intake of frozen fish	Wasted	No. of children
No intake	3.8	1,565
Any intake	1.4	1,751
Total	**2.5**	**3,316**

X^2= 19.13, p<.00005

Table 4.81: Percentage distribution of thin children by intake of frozen fish

Intake of frozen fish	Thin	No. of children
No intake	4.2	1,565
Any intake	2.8	1,751
Total	**3.5**	**3,316**

X^2= 4.95, p=.026

Table 4.82: Percentage of thin children by intake of fresh fish

Intake of fresh fish	Thin	No. of children
No intake	4.0	1,905
Any intake	2.6	1,411
Total	**3.5**	**3,316**

X^2= 4.60, p=.032

Protein diet in the first year of life:
There are less stunted children in those who eat food rich in protein and iron (Cerelac, eggs, meat) in the first year of life.

Table 4.83: Percentage distribution of stunted children by high protein and iron intake in the first year of life

Intake of food	Stunted	No. of children
High protein and iron intake	7.6	1,382
Other food	9.9	1,948
Total	**9.0**	**3,316**

X^2= 5.29, p=.021

4.6 Summary

This survey aimed at examining selected nutritional indicators of Palestinian women of child bearing age and children less than 5 years, given the condition of rising political violence and poverty. Its main findings are as follows;

Socio demographic variables

Results on the type of dwelling, crowding, and durable amenities confirm that there is more poverty in Gaza Strip compared to the West Bank. As there are more villas/houses (separate dwellings) in the West Bank, less crowding in the households and more households who own durable goods of high socio-economic standards. However, within each region, rural Gaza Strip and rural West Bank are worse off in comparison to other localities, but rural Gaza Strip is far poorer than any other locality in the Palestinian Territory, with 3.0% owning durable goods of high socio-economic status compared to 11.3% in Gaza Strip and 21.6% in the rural West Bank, and crowding reaches a maximum of 66% in rural Gaza Strip compared to 61.3% in Gaza Strip and 55% in the rural West Bank.

As for main source of income, households with no income jumped from 0.7% before the Intifada to 15.1% during the Intifada, and more households became dependent on social welfare for their main source of income 2.5% before the Intifada which increased to 6.5% during the Intifada. As for secondary source of income, it increased from 19.5% before the Intifada to 35.2% during the Intifada, mainly in households seeking social welfare as a secondary source of income 4.4% increased to 20.8%.

The effect of the Intifada on health and nutrition of children

Almost one third of households (36.2%) did not find it difficult to obtain food during the Intifada; with significantly more households facing difficulties in the rural areas compared to urban and camp settings, with no regional variation. As for types of localities within regions, there was a significantly high percentage of households always facing difficulties in obtaining food in rural Gaza Strip (40% compared to 22% in rural West Bank), and the lowest percentage of households facing no difficulties, was also in rural Gaza Strip (17% compared to 34.4% in rural West Bank).

More than half (64.7%) of the households reduced the quality of their food during the Intifada, and 67.5%, 71.5% and 56.9% reduced the quantity of meat, fruits and dairy products they consumed per month respectively. Reduction in quality of food and quantity of meat consumed per month, affected mainly rural areas, while camps were affected by a reduction in dairy products, and urban areas by a reduction of fruits consumed per month, reflecting availability as well as purchasing power.

Households who reduced their food consumption in quality and quantity per month were mainly from Gaza Strip with fruits (79.9%) and meat (72.3%) mostly reduced.

Looking at type of locality within regions, rural Gaza Strip had the greatest reduction in quality of food (86.0%), quantity of meat (87.1%), quantity of fruits (90.0%) and dairy products (82.0%) compared to other localities within Gaza Strip. Similarly, rural West Bank had the greatest reduction within the West Bank region in quality of food (68.7%), quantity of meat (72.5%), and quantity of fruits (73.9%), but not in dairy products.

In adapting to reduction of food consumption, households in Gaza Strip borrowed money, sold assets, and became dependent on food aid more than households from the West Bank. Rural areas within both regions, especially rural Gaza Strip, were least able to use these coping mechanisms compared to other localities.

Difficulties in obtaining health care during the Intifada were more severe in the West Bank (41.6%) compared to Gaza Strip (32.2%), mainly due to its large rural area, which suffered more siege than other localities.
The cause of such difficulties varied between the two regions, with sieges mainly affecting the West Bank (91.7%) versus Gaza Strip (45.3%), and particularly affecting rural West Bank (94.7%). The same occurred with curfews as only small areas in Gaza Strip had curfews (1.9%) compared to the West Bank (62.3%), in this instant affecting West Bank camps in particular (72.7%).

As for difficulties in obtaining health services due to inability to pay, it was worse in Gaza Strip (84.8%) compared to the West Bank (70%), particularly rural Gaza Strip (90.9%), which suffered from more poverty than other localities.

Other reasons that affected the use of health services were more common in the West Bank, such as lack of services (41.3%), distance of the service (45.8%) or lack of medical personnel at the clinic (47.4%), compared to Gaza Strip (11.4%, 24.8%, 18.5%) respectively. Within each region, households from the rural areas were affected more by the different reasons that caused difficulties in obtaining health care during the Intifada, in particular rural West Bank.

Looking at questions pertaining to accessibility to medical services in case of a child's illness, households in Gaza Strip had better accessibility compared to the West Bank; to a hospital (73.3% in Gaza Strip versus. 50.8% in West Bank), and a health center (91.3% in Gaza Strip versus 78.1% in West Bank). While private doctor's clinic and pharmacies were more accessible in the West Bank (77.5%, 79.9% respectively) compared to Gaza Strip (71.8%, 78.5% respectively).
Within the two regions, the rural areas suffered the highest percentage of inaccessibility to these health services for households requiring medical care for their sick children.

Mothers
Almost half of the mothers (52.3%) are below the age of 30 years and 93.3% are not working. There are more mothers in Gaza Strip who completed secondary education than in the West Bank (23% versus 12.7%), while the remaining educational levels are similar in the two regions.
Women from the camps have the highest percentage in completing secondary and higher education compared to women in other types of localities, while rural areas have the lowest percentage of women finishing higher education, with rural Gaza Strip slightly worse than rural West Bank (5.9% vs. 8.5% respectively).

As for the question on preferred health services, mothers from the camps equally favor UNRWA clinics (36.6%) and private clinics (34.3%), while women living in the rural and urban settings prefer private clinics (46.9% rural, 44.3% urban), almost twice as much as Government MCH clinics (17.2% rural, 21.6% urban) or Government hospitals (22.1% rural, 16.0% urban).

Most of the mothers obtain their information on child nutrition from the mass media (75.6%), followed by family members and friends (72.9%), and a low percentage of 43.8% obtain their information from qualified medical staff.

Mothers' knowledge about child feeding has several problems: one is confusion about when to give children tea - as 50.3% said they did not know when to give it. The second is recognizing the right age for introducing important food such as meat, eggs, and fruits as they were either given later than recommended or covered a wide range of ages suggesting lack of correct information.

As for causes of anemia, most mothers incorrectly thought that milk has a lot of iron and lack of it causes anemia (79.6%), and only half of the mothers correctly knew about the high iron content in legumes with only 57.1% saying that a lack of it can cause anemia. On the questions of preventing anemia, 89.3% and 94.4% of mothers incorrectly said that milk and juice could prevent anemia, when milk and most juices have low iron content.

As for mothers' impression of thin and short children, the answers correlated significantly with the true measurements, although detection rate was generally low and mothers' perception was more sensitive than specific, as many children who were normal were thought to be short or thin by their mothers.

Children

Most of the households in the sample (92.2%) have up to 8 children, and 59.4% of households have up to 4.

Almost one fifth (18.7%) of the children were born within 18 months of an older sibling, and 29.1% have a younger sibling born within 18 months. There was no significant difference in the sex of the child for those who have a younger sibling born within 18 months.

There are 6.7% of children with chronic diseases, 30.7% suffered from a serious illness in the past two weeks preceding the survey, and 17.7% suffered from parasitic infection in the last 6 months preceding the survey. Parasitic infection was significantly influenced by a mother's education and socio-economic status of the family.

Premature delivery was high at 15.0% and low birth weight at 12.2%. Neither of them varied with region, type of locality, nor with sex of the child, except for LBW which was affected by the sex of the child (15.2% for females vs. 9.4% for males), which may suggest that in utero diagnosis is harmful to the female fetus.

A high percentage of children were breast- fed (95.8%), with half being breast-fed for 14 months. Despite a high breast-feeding rate, 56% of mothers used other milk and half of them introduced it in the first three month of life.

Most of the mothers (79.8%) used infant powder milk; which is used more in the camps than other types of locality, and in Gaza Strip more than in the West Bank. Surprisingly, there was no sex difference in using formula milk despite it being the most expensive form of infant milk.

Vitamin A&D and iron supplementation at MCH clinics in the UNRWA and Government sectors vary according to their policies influencing the percentage of uptake.
The Government sector provides vitamin A&D routinely to all infants from birth, while UNRWA does not. As a result, Vitamin A&D uptake is low in Gaza Strip (25.9%) compared to the West Bank (63.8%), and lowest in the camps at 43% compared to the rural (54.6%) and urban settings (48.4%).

As for iron, the Government policy is to provide all infants with iron at 6 months of age, then to check hemoglobin level at 9 and 12 months to verify if there is a need to increase the dose to treatment level or carry on. The UNRWA sector does the same except for checking the hemoglobin at 12 months only. There are more children on iron in Gaza Strip (39.6%) compared to the West Bank (34.1%), and more in the Camps (47.2%) compared to rural (32.8%) and urban (32.8%) settings.

Enquiring about weaning practice, the results have highlighted that iron and protein rich food (chicken/meat/fish) is given to infants by 31.6% of their mothers at 8 months, when the recommended age is for all the children to start having it at 6 months, the deficiency of which can exacerbate anemia at this vulnerable age.

Children's feeding practice indicated that most of the households in the Palestinian Territory do not consume frozen meat (69.5%) and frozen fish (47.2%). This could be due to cultural practice and to the availability of such products in the different regions and localities. The same was observed for fresh fish as only 57.4% of children consume any amount, probably because of availability and cost.
One third of households do not consume liver at all despite its high iron content and 24.6% do not consume fresh meat. A small (10.3%) but significant proportion of children do not consume milk or milk products, although it is essential for a child's growth.
What was consumed frequently by most of the children was rice/bread (93.2%) and non-leafy vegetables (93.1%), both of which have a low protein and iron content that is essential for growth. Next in consumption are eggs (85.3%) and milk products (77.0%), then fresh fruits (55.8%).

Most of the children drink tea (69.8%) with rates increasing with age, from 13.6% of children aged 6-11 months to 85.7% of children age 48-59 months, and almost 90% of children consume it with meals always or sometimes. This is problematic as it might interfere with iron absorption and causes anemia when consumed with vegetable based iron rich food.

Child's nutritional indicators

Anemia:

There are 37.9% of children 6-59 months in the survey with anemia below 11 mg/dl. Anemia decreases with age with the highest percentage at 6-11 months (59.3%), followed by 12-23 months (48.2%), reaching a minimum of 18.8% for children 48-59 months.

With children from 12-59 months, it was found that anemia is more common in Gaza Strip (38.7%) and in the camps (40.1%).

Anemia is significantly lower in children of a lower rank, first or second (31.8%), compared to those who are third or more (37.1%). Also the middle child who is born within 18 months from a younger and older sibling was found to be significantly more anemic (43.4%) than other children (25.9%).

Anemia is more frequent in those who take iron and this is not affected by duration of iron intake, suggesting that policies are problematic and that these children are at high risk, irrespective of therapy, and should be closely monitored.

Anemia was found to be less frequent in children who drink tea in the age group 48-59 months, but not in other age groups. This effect of tea on reducing anemia is not real because tea is known to chelate iron and reduce its absorption, and has no effect on anemia otherwise. The effect is probably influenced in this case by other factors not controlled for, and suggests that the diet of Palestinian children is not affected by tea drinking because it is not a vegetarian diet.

Attempting to examine the relationship between foods consumed by children and anemia, it was found that of all the food, chicken was the only item where an intake of once a week or more significantly reduced anemia.

Growth parameters:
A small percentage of children were thin (3.5%), or wasted (2.5%), while a larger percentage were stunted (9%), reflecting the delicate relationship between acute and chronic malnutrition.

Rural areas have the highest percentage of thin (6.2%), wasted (4.6%) and stunted (10.9%) children, while thin and wasted children are least found in urban areas, and stunting is least found in the camps. This unusual trend of severe chronic and acute malnutrition in rural areas versus camps and urban settings may suggest that severe conditions are present in the rural areas affecting child's growth, which could be due to poverty, availability and accessibility of health services, mother's education, and many other factors.

There are more thin children in the West Bank (4.0%) and more stunted children in Gaza Strip (10.5%).

Stunting is very high in rural Gaza Strip (18.7%) compared to rural West Bank (10.2%).

There is less stunting in children of households of high socio-economic status.

There is less wasting and more stunting in children of households living in crowded households.

There is significantly more wasting in households whose main income comes from working in Israel (4.3%), or have no income (4.8%), while the lowest percentage of wasting is in children whose households work in the private sector (1.4%), suggesting recent impoverishment, as indicated by wasting which follows acute malnutrition.

There was more stunting in children of households who reported changes in food consumption in quality and quantity (7.8% vs. 10.1%).

There are more stunted (17.4%) and thin children (7%) in households with illiterate mothers.

There is marginally more stunting in children who have an older and a younger sibling born within 18 months from their birth (9.6% vs. 18.1%). This result may suggest that there are competing nutritional demands between children of close age groups, especially when they are young and dependent on their caretaker for food and health care.

There are more thin and stunted children in those with chronic diseases, which can be a reflection of poor health services or the severity of the disease itself.

There is more stunting in children of low birth weight.

There are more stunted and thin children in those with at least 2 parasitic infections in the last 6 months.

Children of a lower rank have less stunting but more wasting than those with a higher rank.

There is more wasting in children on iron medication.

There are less wasted but more stunted children in those who drink tea.

Examining the relation between food consumed by children and their growth, it was found that there is more stunting in children who consume plant proteins once a week or more, possibly a reflection of poverty; and less stunting in children who consume milk products 2-3 times a week or more, which is full of calcium and protein.

Other significant relations that are slightly more difficult to interpret are the findings of fewer thin children in those who consume liver once a week or more, less wasting in children who eat chicken or meat at least once a week, less thin and wasted children in those who consume any intake of green vegetables, and less thin children in those who eat any amount of fresh or frozen fish, and less wasting in those who eat frozen fish.
This interpretation is difficult because such analysis should include quantity of food consumed, which is not available, and should use a different form of analysis, which can include multiple regressions.

4.7 Conclusion:
It is important to emphasize that these statistical conclusions are constrained by the size of the sample. Although the overall number of children is adequate enough to make some definitive conclusions, detailed analysis of different groups was not possible because of this limitation, especially when examining children and mothers from rural Gaza Strip.

In general, the main indicators that seem to affect child nutrition in these exceptional circumstances of occupation and invasions are accessibility and ability to purchase food and health services, both attributed to increasing poverty and siege, the MCH policy on iron prescribing, and mothers' feeding practice, which could relate to mothers' education and mothers' source of information about their child's nutrition.

Poverty:
The results of this study demonstrate a clear association between poverty and child nutrition, which has certainly affected child's growth. Child nutrition have been worst in rural areas with wasting at 4.6%, thin children at 6.2% with stunting at 10.9%, reaching a maximum of 18.9% in rural Gaza Strip.
Poverty in this context is strongly related to the Israeli measures of closure and siege during the Intifada, reducing work opportunities and income (no income households increased from 0.6% before the Intifada to 15.1% during the Intifada), making more households dependent on social welfare (2.5% BI increased to 6.5% DI) and looking for secondary sources of income (19.5 BI increased to 35.2% DI, mainly in households seeking social welfare as a secondary source of income: 4.4% BI to 20.8% DI.
This level of poverty has resulted in a reduction in quality and quantity of food consumed by households especially in Gaza Strip and in particular the rural areas of Gaza Strip, which might explain the high rate of stunting as there is significantly more stunting in households who had a change in food consumption overall (7.8% vs. 10.1%, x^2=5.32, p=.021).

This might have affected the mothers' feeding practice to a variable extent, as 24.6% of households do not give their children any red meat or fresh fish (57.4%), both of which are very expensive. To our disappointment frozen meat and fish are not popular in the Palestinian Territory as few households provide it for their children (30.5% and 52.8% respectively), although they can be a cheap alternative to fresh fish and meat, both high in protein, vitamins and minerals, and have significant association with less wasting and thinning. Consuming fresh meat is associated with less wasting (x^2=16.92, p<.00005), consuming fresh fish with less thin children (x^2=4.6, p=.032), and consuming frozen fish with less thinning and wasting (x^2=4.95, p=.026, x^2=19.13, p<.00005) respectively, while consuming frozen meat had no significant association with growth parameters, possibly due to confounders of poverty and to the small numbers of households who use it.

Health services:
It is worth noting that the widespread poverty, mostly in Gaza Strip especially rural Gaza Strip, has started well before the outbreak of Intifada, Israeli invasions, and re-occupation with the separation of the areas into A, B and C during the Oslo period, which had culminated in the separation and isolation of areas C, i.e. the rural areas. This isolation which started in 1996 was exacerbated later by military invasions, siege, closures and curfews. So it did not only affect income, but also health in terms of accessibility and availability of services. When asked about

difficulties in obtaining health care, households in the West Bank (41.6%) were more likely to face difficulties than households from Gaza Strip (32.2%). When asked about the cause, sieges was the most common answer, affecting 91.7% of households in the West Bank and 94.7% of households in rural West Bank. Curfews on the other hand, affected the West Bank much less (62.3%) than sieges, as it affected mainly the urban areas and in particular the West Bank camps (72.7%). Other reasons for not using the health services were lack of a service, distance of the service or lack of medical personnel, which affected the West Bank more than Gaza Strip, but the rural areas within each region suffered more than other localities, and in particular rural West Bank.

The same answers were obtained when households were asked about accessibility of specific health services for when the children need acute medical care. The answers showed that Gaza Strip has more accessibility to all services than the West Bank, but again rural areas have the lowest rate of accessibility within each region, with rural West Bank suffering the most. This is expected to have an implication on child nutritional status as health directly influences child growth and anemia. For example, it was found that children with chronic diseases or with 2 parasitic infections in the last 6 months are more stunted and thin, while children of low birth weight are more stunted.
One important item worth mentioning is the strong correlation found between antenatal diagnosis by health professionals of female fetuses and low birth weight, suggesting a possible discrimination against the female fetus by the mother or other family members in terms of mother's nutrition. If this is true, this discrimination does not seem to go beyond birth because the analysis of growth parameters, anemia feeding practice…etc did not indicate any influence by the sex of the child.

MCH policy on anemia:
Child growth in the camps have shown to be superior to rural areas overall and there are lower numbers of stunted children than in other localities. This has been attributed to accessibility of health services, availability of food aid, and other services provided by UNRWA. Consequently, the finding of more anemia in the camps than in other types of localities was puzzling, especially when further analysis of anemia showed it only linked to rank of the child, source of income, age groups of children, and chicken consumption, none of which is specific to the camps.

Other indicators that were found to affect anemia that are also difficult to interpret are: more iron is prescribed in the camps; and children on iron have more anemia despite adequate duration of treatment. This can only indicate an overall ineffective policy of management of iron deficiency anemia at UNRWA clinics, which can relate to compliance with the medication, the type of iron preparation used, advice given on how to take it as many foods can interfere with iron absorption.

Feeding practice, mother's information and education:
Mother's information on child nutrition is influenced by the Media (75.6%) and family members and friends (72.9%), while health professionals make a smaller contribution of 43.8%. Consequently, a mother's knowledge is not always correct. This has been highlighted by the answers to the questions on mother's knowledge about age of introduction of certain food items, which showed confusion about when to introduce tea and the delay in introduction of items essential for growth such as meat, chicken, and liver, eggs, and fruits. The answers to the causes and treatment of anemia showed similar patterns, as most of the mothers wrongly thought milk

and juices were rich in iron, and only half of them knew that legumes have high iron content, even though it is widely consumed by Palestinian households.

Similarly, weaning practice in the first year of life has also shown that important food items such as meat, chicken and liver, high in iron and protein, are introduced at a later age than recommended, which is 6 months (half of the mothers introduce it by 10 months). This can exacerbate anemia, particularly at this vulnerable age. Luckily, the protein is compensated for by breast milk, which has a high uptake at this age group from 6-12 months, providing enough protein for growth in height.

As for child feeding practices, the issue is problematic due to a combination of poverty, availability of food and cultural practice. This is shown by the investigation of adequate intake of expensive food items such as fresh red meat, dairy products and chicken, which is consumed by 35.1%, 77% and 38.5% of children, respectively (note that quantity was not measured). Having said this, most of the children consume frequently (2-3 times a week or more) rice/bread (93.2%) and non-leafy vegetables (93.1%), both of which are low in protein and iron. Next in consumption are eggs (85.3%), milk products (77%), and fresh fruits (55.8%).

Due to an overall lack of animal and plant protein and iron rich food in meals consumed by some children, one can conclude that the above food intake starting from weaning time and until childhood is a good recipe for anemia and stunting, especially as the child is dependent on the caretaker for feeding and the quantity of food consumed is small.

Chapter Five

Anemia among women

This chapter focuses on the analysis of selected variables that form a small part of the larger nutritional survey 2002. It includes questions on age, marital status, number of pregnancies, age at first pregnancy and iron intake for 6,193 women in the reproductive age from 15-49 years for whom hemoglobin level was checked. The initial analysis that follows examines key findings in relation to each other as well as in relation to region and locale, hoping to identify main trends that can assist in future policy formulation.

5.1 Marital status:

Most of the women in the survey were married (59.4%), and a little over one third (37.5%) were never married. Those who were divorced, widowed or separated made a small percentage of 3.1% of the total sample. Note, there is a slight increase in never married women in this survey (37.5%) compared to the 2000 health survey (35%), and a decrease in married women from 62.2% in the health survey 2000 to 59.4% in 2002.[1] The numbers in the other categories were inadequate for comparison.

Table 5.1: Percentage distribution of women by marital status

Marital Status	Percentage	Number of Women
Single	37. 5	2,323
Married	59. 4	3,676
Divorced	1. 7	109
Widowed	1. 3	80
Separated	0.1	5
Total	**100**	**6,193**

5.1.1 Marital status by type of locality and region

Examining marital status and type of locality, there are significant variations (x^2= 24.27, p=.002), with more never married (40.2%) and less married (56.6%) women in the rural areas than urban (36.5% and 60.5% respectively) and camp (36.3% and 59.9% respectively) settings, but this relation did not persist on the regional level.

5.1.2 Marital status by age groups of women

Most of the women in the age group 15-24 years were never married (68.6%). By the age of 25-34 years, there is a dramatic increase in married women compared to women aged 15-24 years from 30.3% to 79.5% with a decrease in never married women from 68.6% to 17.7%. After the age of 34 years the decrease in never married women is small (17.7% to 10.2%), with even a

[1] PCBS-2000. Health Survey-2000. Main Findings.

smaller increase in married women (79.5% to 82.9%) due to an increase in other categories of marital status such as widowed, divorced or separated.

Table 5.2: Percentage distribution of women by marital status and age

Marital status	Age group in years			Total
	15-24	25-34	35-49	
Never married	68.6	17.7	10.2	37.5
Married	30.3	79.5	82.9	59.4
Divorced	1.0	2.0	2.8	1.7
Widowed	0.1	0.7	3.9	1.3
Separated	0.0	0.1	0.2	0.1
Total	**100**	**100**	**100**	**100**

X^2= 2017.47, p<.00005

5.2 Pregnancy:

5.2.1 Age at first pregnancy

The median age at first pregnancy is 19 years, with the minimum at 15 years and the maximum at 41 years. Almost two thirds (69.4%) of women had their first pregnancy by 20 years and 30% between 31-34 years.

5.2.2 Age at first pregnancy by type of locality and region

There is no significant difference between age at first pregnancy and region, type of locality, or type of locality within region.

5.2.3 Age at first pregnancy by current age

Examining current age in relation to age at first pregnancy showed, surprisingly, that older women had their first pregnancy at a later age compared to younger women. This significant trend was consistent from age 15-24 years, 25-34 years and 35-49 years, showing a gradual decrease in the percentage of women having had their first pregnancy at 15-19 years from 79.9% to 57.3% to 48.9%, respectively for each age group. This trend could be attributed to a higher incidence of early marriage in recent years compared to previous years, or because older women tend to have had their first pregnancy at an older age. Age at marriage is a confounder in this relation, yet not available to examine.

Table 5.3: Percentage distribution of women by current age and age at first pregnancy

Age at first pregnancy	Current age			Total
	15-24	25-34	35-49	
15-19	79.9	57.3	48.9	58.4
20-24	20.1	34.7	35.4	32.1
24-29	-	7.2	10.7	7.2
30-34	-	0.7	3.5	1.7
35-39	-	-	1.5	0.6
40-44	-	-	0.0	0.0
Total	**100**	**100**	**100**	**100**

X^2= 268.21, p<.00005

5.2.4 Previous pregnancies

Only 6.5% of ever married women have never been pregnant. Note this excludes women who were pregnant at the time of the survey.

Table 5.4: Percentage distribution of women who had no previous pregnancy

Pregnancy status	Percentage	Number of Women
Had been pregnant	93.5	3,614
Never been pregnant	6.5	251
Total	**100**	**3,865**

5.2.5 Total number of pregnancies

The total number of pregnancies (including abortions) ranged from 0-22 pregnancies with 55.4% of ever married women having had up to 5 pregnancies, while 35.3% had from 6-10. Only 5.0% of women have never been pregnant- this may indicate the infertility rate, but as age at marriage is not available as a control, this percentage remains inconclusive.

Table 5.5: Percentage distribution of women by number of pregnancies

Number of pregnancies	Percentage	No. of women
None	5.0	195
1-5	50.4	1,945
6-10	35.3	1,364
11-22	9.3	361
Total	**100**	**3,865**

5.2.6 Present pregnancy status

Only 13.4% of ever-married women were pregnant at the time of the survey.

Table 5.6: Percentage of ever married women by currently pregnancy status

Pregnancy status	Percentage	Number of Women
Currently pregnant	13.4	518
Non pregnant	86.6	3347
Total	**100**	3865

5.2.7 Duration of pregnancy

Out of all the women who were pregnant at the time of the survey, almost one third were in each trimester of pregnancy.

5.3 Anemia:

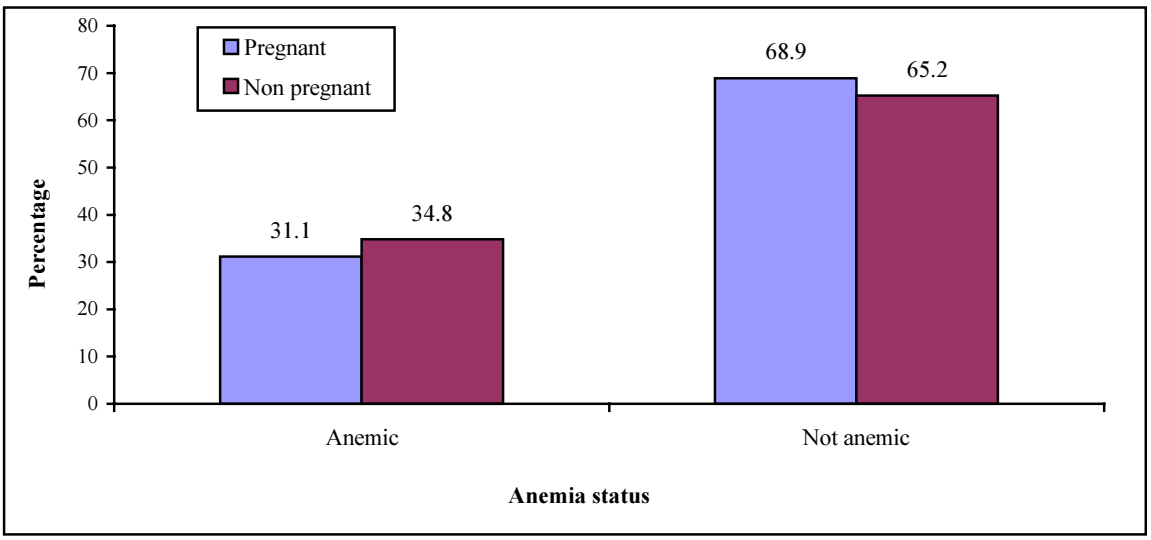
Anemia in women occurs when the hemoglobin level is below 12 mg/dl. It is influenced by many factors. During pregnancy and due to normal physiological changes, a woman's hemoglobin can drop to lower levels without necessarily requiring treatment. This is called physiological anemia. Due to variation in the hemoglobin cutoff point during pregnancy below which anemia requires treatment, the World Health Organization (WHO) has advocated a level of 11 mg/dl as the level below which treatment is required. This guideline has been adopted by UNRWA in the Palestinian Territory and will be used in this analysis.

Based on this definition, two categories of anemia will be used in the analysis - one for pregnant women (11mg/dl) and another for non-pregnant and women who have never married (12mg/dl).

5.3.1 Anemia among ever-married women

After examining anemia rates in pregnant and non-pregnant women using different cut off points, it was found there are more anemic women in the non-pregnant group than those who are pregnant. This unexpected finding might be a result of the inadequate health care provided for non-pregnant women within the different health sectors.

Figure 5.1: Percentage distribution of women by anemia and pregnancy status

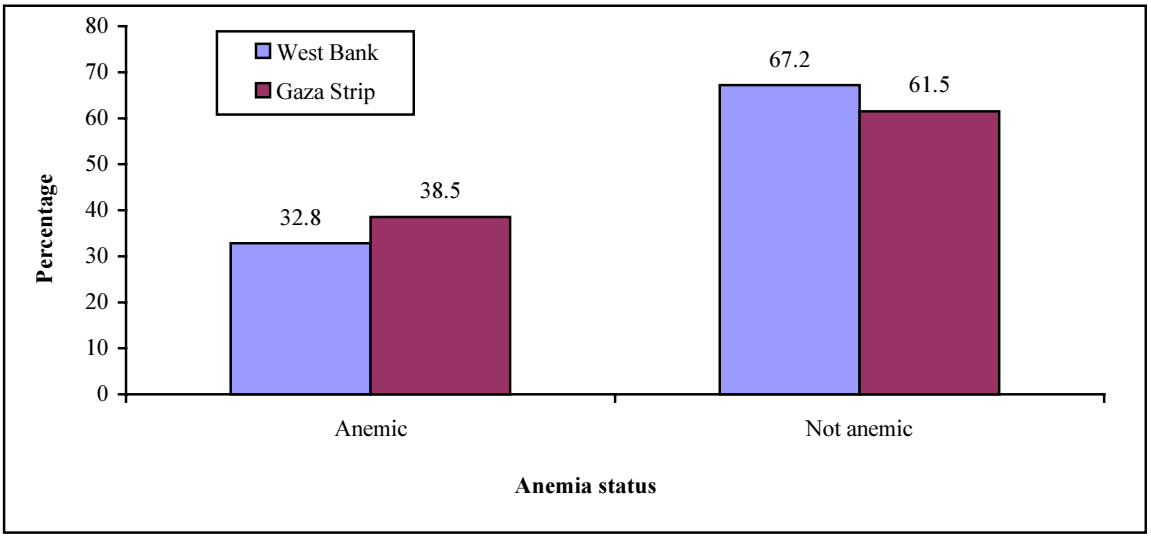


5.3.2 Anemia by type of locality, region and age groups:

There is no significant relation between anemia in pregnant women by age groups, type of locality, and region.

For non-pregnant women, we found that with increasing age the incidence of anemia increases. However, once we controlled for the number of pregnancies, the relation between anemia and age of the woman became insignificant.

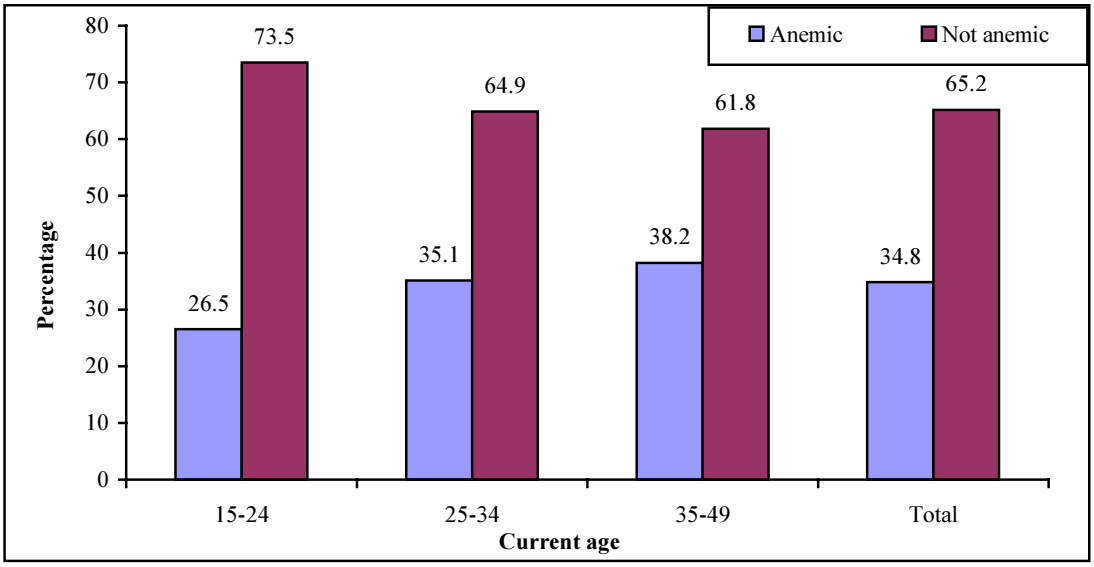
Figure 5.2: Percentage distribution of non-pregnant women by anemia status and region



X^2= 10.71, p=.001

As for the incidence of anemia in non-pregnant women, it does not change between types of localities, but it does between regions –there is a higher incidence of anemia in the Gaza Strip compared to the West Bank.

Figure 5.3: Percentage distribution of non- pregnant women by anemia status and current age



X^2= 25.05, p<.00005

5.3.3 Anemia by previous pregnancy status

There is a direct relation between anemia and pregnancy - 38.5% of women who have anemia have been previously pregnant, while 29.7% of women with anemia have not been pregnant before.

Table 5.7: Percentage distribution of women by anemia and previous pregnancy status

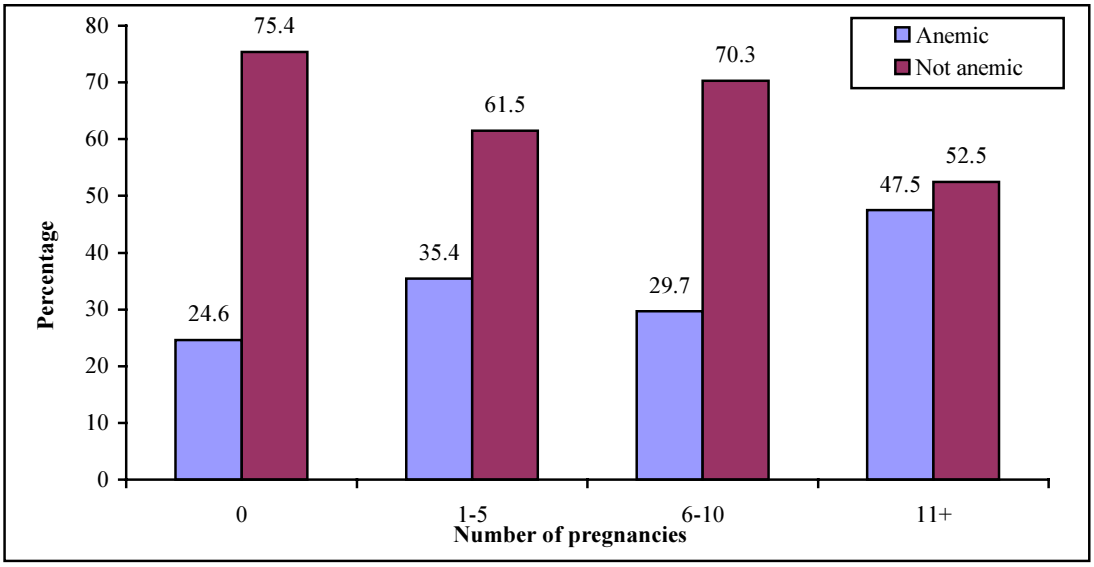
Previous pregnancy status	Anemia status		Total
	Anemic	Not anemic	
Pregnant before	38.5	61.5	100
Non-pregnant before	29.7	70.3	100
Total	**38.0**	**62.0**	**100**

X^2= 7.41, P=.006

5.3.4 Anemia by total number of pregnancies

The incidence of anemia increases as the number of pregnancies a woman had, increases. This incidence reaches a maximum at 47.5% in women with 11 or more pregnancies.

Figure 5.4: Percentage distribution of women by anemia status and total number of pregnancies



X^2= 37.23, p<.00005

5.3.5 Anemia among never married women

The incidence of anemia in never married women is fairly high at 24.4%. For ever married women, the incidence of anemia is higher - 31.1% for pregnant and 34.8% for non-pregnant women see figure 5.1

Table 5.8: Percentage distribution of never married women by anemia status

Anemia status	Percentage	No. of women
Anemic	24.4	503
Not anemic	75.6	1,562
Total	**100**	**2,065**

There is no significant relation between anemia in women who have never been married and type of locality, region or age groups.

5.4 Iron:

5.4.1 Iron Intake

The percentage of women aged 15-49 years taking iron is 7.1%. This is well below the current incidence of anemia in the same group- 31.1% for pregnant women, 34.8% non-pregnant women and 34.8% for never married women. . This suggests that prescribing iron does not necessarily address the needs of women in the reproductive age overall.

Table 5.9: Percentage of women by iron intake

Iron intake	Percentage	No. of women
Received	7.1	440
Did not receive	92.9	5,750
Total	**100**	**6,190**

5.4.2 Iron intake by type of locality and region

Iron is prescribed more in refugee camps, (where services are offered by UNRWA) than other localities. Iron prescriptions are lowest in rural areas, and there is no regional variation.

Table 5.10: Percentage distribution of women by iron intake and type of locality

Type of locality	Received iron	Did not receive iron
Urban	7.4	96.2
Rural	5.8	94.2
Camp	8.4	91.6
Total	**7.1**	**92.9**

X^2= 7.02, p=.030

5.4.3 Iron intake by age groups of women and number of pregnancies

The highest percentage of women receiving iron are in the age group of 25-34 years (9.1%), and those who had 1-5 pregnancies (12.9%), followed by those who had 6-10 pregnancies (9.5%). This suggests that women at an active reproductive age are most likely to receive iron, regardless of their anemia status. This may well be due to the focus of MCH centers on pregnant women.

Table 5.11:Percentage of women by iron intake and age groups

Iron intake	Current age			Total
	15-24	25-34	35-49	
Received	6.0	9.1	6.5	7.1
Did not receive	94.0	90.9	93.5	92.9
Total	**100**	**100**	**100**	**100**

X^2= 17.18, p<.00005

Table 5.12: Percentage distribution of women by iron intake and number of pregnancies

No. of pregnancies	Iron intake		Total
	Received	Did not receive	
None	4.6	95.4	100
1-5	12.9	87.1	100
6-10	9.5	90.5	100
11+	4.7	95.3	100
Total	**7.1**	**92.9**	**100**

X^2= 32.88, p<.00005

5.4.4 Iron intake by anemia status

Investigating iron intake and anemia status in currently pregnant women indicated that almost half of those (53.5%) who were found anemic were on iron supplementation at the time of the survey. Curiously, 49% of currently pregnant non-anemic women were also on iron supplementation at the same time, with no significant difference in the incidence of anemia between those who are on iron and those who are not.

Table 5.13: Percentage distribution of pregnant women by anemia status and iron intake

Anemia status	Iron intake		Total
	Received	Did not receive	
Anemic	53.5	46.5	100
Not anemic	49.0	51.0	100
Total	**50.4**	**49.6**	**100**

Looking at iron intake and anemia in non-pregnant and never married women, a small percentage of non-pregnant women (5.8%) and never married women (2.8%) who are anemic were found to be on iron. This indicates a significant difference in the percentage of women who are anemic and on iron in the pregnant group compared to those women who are not pregnant or never married

This suggests that non-pregnant and never married women prone to anemia are not accessing adequate health care.

Table 5.14: Percentage distribution of non-pregnant women by anemia status and iron intake

Anemia status	Iron intake		Total
	Received	Did not receive	
Anemic	5.8	94.2	100
Not anemic	3.5	96.5	100
Total	**4.3**	**95.7**	**100**

X^2 9.83, p=.002

Table 5.15: Percentage distribution of never married women by anemia status and iron intake

Anemia status	Iron intake		Total
	Received	Did not receive	
Anemic	2.8	97.2	100
Not anemic	1.2	98.8	100
Total	**1.5**	**98.5**	**100**

X^2= 6.63, p=.010

5.4.5 Duration of iron intake

Almost half (49.4%) of the women surveyed have taken iron supplementation for up to 30 days, and 44% reported being on supplementation from 31-300 days with the mean duration of 90 days and a maximum of over one year of therapy.

5.4.6 Duration of iron intake and anemia:

There is no significant difference between the incidence of anemia and duration of iron intake (up to 30 days and more than 30 days) in pregnant, non-pregnant and never married women. This indicates a possible delayed or no response by the hemoglobin level to iron supplementation, suggesting that supplementation is not very effective in dealing with anemia. This is especially true in view of the fact that adequate iron supplementation is known to increase hemoglobin levels within 2-4 weeks of commencing therapy.

5.5 Summary:

This initial analysis indicates that 62.5% of women participating in this survey were married, while 37.5% were in the unmarried state. There may have been a slight increase in singlehood since 2000, as the PCBS health survey for that year placed the percentage of never married women at 35%.

The mean age at first pregnancy is 19 years, with 15 years being the minimum and 41 years the maximum, with no variation in age at first pregnancy by types of localities and regions.

Women belonging to the older age groups had their first pregnancy at a later age than those belonging to the younger age groups.

A small percentage of ever married women have had no previous pregnancies (6.5%), with 13.4% being currently pregnant.

The number of pregnancies, including abortion, is between 0-22 pregnancies, 55.4% of ever married women having had up to 5, and 35.3% had from 6-10 pregnancies.

The small percentage of women who were pregnant at the time of the survey may be equally divided between the three trimesters.

The percentage of anemia below 12 mg/dl in non-pregnant women was 34.8%, and in never married women at 24.4%.

The percentage of anemia below 11 mg/dl in pregnant women was at 31.1%.

There is a higher percentage of anemia in non-pregnant women in Gaza Strip (38.5%) than in the West Bank (32.8%).

The percentage of anemia in women who have had a previous pregnancy (38.5%) is greater than in those who have not (29.7%).

The percentage of anemia in women increases with the increase in the number of pregnancies, reaching a maximum of 47.5% in those who have had 11 or more pregnancies.

Only 7.1% of women surveyed are on iron, despite the presence of a much higher level of anemia in all women.

There is more iron prescribed in refugee camps (8.4%) compared to other localities (5.8% in rural and 7.4% urban settings).

The highest percentage of iron intake at the time of the survey occurs in women who are between 25 and 34 years (9.1%), those who have had between 1 and 5 pregnancies (12.9%) followed by those who have had between 6 and 10 pregnancies (9.5%).

Iron supplementation did not correspond significantly to the presence or absence of anemia among women of child bearing age. Fifty three percent of pregnant anemic women were on iron

supplementation at the time of the survey, compared to 5.8% among anemic non-pregnant women, and an all time low of 2.8% among never married anemic women. Clearly, a bias exists in favor of pregnant women to the disadvantage of non pregnant and never married women who suffer from anemia.

There is no difference in the percentages of anemia by duration of iron intake (up to 30 days and more than 30 days) in women who have never married, non-pregnant, and pregnant women. These results suggest that iron supplementation may be ineffective.

5.6 Conclusion and recommendations:

This survey reveals important trends in the area of women's health, possibly representing the tip of the iceberg of Palestinian women's health status during these exceptional conditions. The main results, especially those related to the high levels of anemia among women of child bearing age that were identified by this survey, are of immediate concern to policy makers. They call for prompt actions to be taken to address this preventable problem that Palestinian women are probably suffering silently. Anemia among women can have serious consequences on the women themselves as well as their children. This disease of poverty and deprivation is not only preventable, but can also be managed at relatively low costs. While anemia in pregnant women is partially physiological (31.1% using 11mg/dl as a cut off point), this does not explain why there are equivalent numbers of non-pregnant women who are also anemic (34.8%, using 12mg/dl as a cut off point), and slightly less never married women with anemia (24.4%, using 12mg/dl as a cut off point). The result may reflect what we already know, namely that mother and child health services operated by the governmental and UNRWA sectors target pregnant women, while neglecting non-pregnant and never married women. as if women have no health needs of their own, and as if women's health is important in as much as they fulfill a reproductive but not other roles in society. What testifies to this apparent neglect of non pregnant women's health needs is also the fact that only 5.8% of anemic non-pregnant women and 2.8% of anemic never married women reported receiving iron supplementation at the time of the survey compared to 53.3% of pregnant women.

On the other hand, the survey results indicate that iron supplementation schemes may be of questionable efficacy, as there were no significant differences in the level of anemia between pregnant women who were on iron supplementation at the time of the survey for at least one month and those who were pregnant but were not on iron supplementation. While further investigation of this particular area is required to ascertain the underlying factors that produced these results. It is important here to raise the issue of coupling supplementation with other mechanisms to ensure compliance, including the health and nutrition education of women and the public at large. This may prove to be an especially important step to take in the face of clinical /anecdotal evidence pointing to non-compliance with iron supplementation as a common phenomenon practiced by both women and children.

This survey also points to the importance of addressing the health needs of never married and non-pregnant women in ways that are still not being practiced in the country. Both groups suffer substantial levels of anemia that are not and cannot be dealt with appropriately in the context of the maternal and child health framework. Women's health in its own right needs to be advocated for at both the policy and operational levels. Cultural constructs and practices assuming the absence of health and medical care needs of especially single women need to be transformed to

recognize today's reality, which is expressed in a rising level of singlehood among Palestinian women. Given that this survey demonstrates that single women between the ages of 15-49 constitute a sizeable proportion of the female population (38%), this point cannot be over-emphasized.

Given the survey findings, several policy, as well as operational and public educational recommendations can be made:

Health services need to transform their concepts and practices to incorporate the health needs of all women, and not merely women's health in relation to biological reproduction. Such services should include special programs addressing women of all ages, whether single or married, pregnant or non-pregnant. Particular efforts should be made to encourage adolescents to attend such services, as this group of women does not usually seek advice at clinics.

The health services policy targeting early detection and prophylactic treatment of anemia in pregnant women should include all women of all ages , after it was discovered that rates of anemia in never married and non-pregnant women is as high as those in pregnant women.

A serious review of the currently used guidelines for the detection, management, follow up, and prevention of anemia should be made. This should include a review of available iron supplementation to assess appropriateness, dosage, dosage form, and duration of treatment required for effective anemia management. Such a review should include an assessment of the patient information contained in the medication package, as well as a review of the information provided by the prescribers and dispensers to women as to when and how they should use the medication, especially in relation to ingestion with specific types of foods that interact with the medication, and how to prevent anemia through adequate nutritional intake (health and nutrition education)..

For the purposes of prevention, it may be best to embark on a campaign for health and nutrition education focusing on all women of child bearing age. This can be achieved through clinics, schools and through the utilization of the local media network, both national and local.

Establishing and maintaining an anemia monitoring and evaluation system that can periodically inform Mother and Child Health clinics about women's health policies and practices in governmental, UNRWA, non-governmental and private sectors.

Finally, one can only hope that the Palestinian health care system will rise up to this challenge and be able in the future to effectively treat and prevent anemia in all women, as anemia is easily treatable and preventable.

References

1. Palestinian Central Bureau of Statistics, 2003. Health Survey-1996. Survey Database. Ramallah-Palestine.

2. Palestinian Central Bureau of Statistics, 2003. Health Survey-2000. Survey Database. Ramallah-Palestine.

3. Palestinian Central Bureau of Statistics, 2001. Impact of Israeli Measures on the Economic Conditions of Palestinian Households. Ramallah-Palestine.

4. World Bank Report, 2002. http://lnweb18.worldbank.org/mna/mena.nsf/Countries/West+Bank/67FB14AF1F54168785256B85003C5F07?OpenDocument: Fifteen Months - Intifada, Closure and Palestinian Economic Crises: An Assessment.

5. WHO 2000-2002. http://www.who.int/child-adolescent-health/NUTRITION/complementary.htm: Nutrition: Infant and Young Child; Complementary Feeding.

6. Nelson Textbook of Pediatrics, 16th edition, 2000. Edited by RE Berhman, RM Kliegman, HB Jenson. Saunders USA.

7. John Hopkins / al-Quds Universities 2003. Nutritional Assessment of the West Bank and Gaza Strip; Clinic Survey.

Annex 1
Questionnaire

Palestinian National Authority
Palestinian Central Bureau of Statistics

Palestinian National Authority
Palestinian Central Bureau
of Statistics

Data collected through this survey is for statistical purposes only and considered as confidential (Based on the General Statistics Law 2000)

IDH00- Questionnaire serial number ☐☐☐	**IDH05-** Number of households in the building ☐☐
IDH01- Governorate _____ ☐☐	**IDH06-** Name of household (HH) head _____
IDH02- Locality _____ ☐☐☐☐☐☐	**IDH07-** Cell code ☐☐
IDH03- EA code of locality ☐☐☐	**IDH08-** Is HH in HH list: 1.Yes 2. No ☐
IDH04- Building number ☐☐☐	**IDH09-** (if answer in IDH08 is Yes) HH Number in list ☐☐☐

Interview Record

IR01- Visits schedule	Day	Month	Year	
	☐☐	☐☐	☐☐	First visit
	☐☐	☐☐	☐☐	Second visit
	☐☐	☐☐	☐☐	Third visit

IR02- Total number of visits	☐

IR03- Interview Result

1	Interview is completed
2	Entire HH absent for extended period of time
3	Non at home
4	Refusal
5	Dwelling is vacant
6	Unit does not exist
7	Other (Specify) _____

IR04- Line number of respondent of HH questi ☐☐	**IR05-** Total members of HH ☐☐
IR06- Total number of children aged 6-59 months	**IR07-** Total number of mothers or caretakers
IR08- Number of eligible women aged 15-49 years	

IR09- Interviewer's Name _____	**IR10-** Interviewer's code _____
IR11- Supervisor's Name _____	**IR12-** Supervisor's code _____
IR13- Editor's Name _____	**IR14-** Editor's code _____
IR15- Coder's Name _____	**IR16-** Coder's code _____
IR17- Data Entry Person's Name _____	**IR18-** Data Entry Person's code _____

☐ *To the interviewer: please put sign (X) inside the square if you have used an additional questionnaire*

Section 1: Household Roaster

							For eligible children	
HR01	**HR02**	**HR03**	**HR04**	**HR05**	**HR06**	**HR07**	**HR08**	**HR09**
Line no. Circle no. of respond-ent	Names of usual HH residents (full names) Please give me the names of the persons who usually live in your HH including children and infants, starting with the head of HH.	What is the birthday of (name) in day/ month/year? ***Interviewer: Birthday should be taken from official documents if possible.*** **Day Month Year**	***Interviewer: Compute age from birthday in HR03 and record the answer in full years.*** ***In case that birthday is un- known, ask for age and record it.*** ***Record (00) if age is less than one year, and 97 if age is 97+.*** ***98 DK.***	***Interviewer: From question HR04 and HR03 identify all children aged less than 5 years then compute their age in months***	***Interviewer: Circle line no. of children aged 6-59 months (eligible for interview)***	***Interviewer: Circle line no. of woman whose age is 15-49 years (eligible woman for interview)***	***Interviewer: From HR06, if there are eligible children, ask who is the caretaker and recod mother or caretaker line no.***	***Interviewer: From HR04, HR05, if*** ***1. There are eligible children (complete the interview)*** 2. ***Eligible women only (go to women questionnaire)*** 3. ***No eligible children and women (end)***
01		___|___/ ___|___/___|___	___|___	___|___	01	01	___|___	___|___
02		___|___/ ___|___/___|___	___|___	___|___	02	02	___|___	
03		___|___/ ___|___/___|___	___|___	___|___	03	03	___|___	
04		___|___/ ___|___/___|___	___|___	___|___	04	04	___|___	
05		___|___/ ___|___/___|___	___|___	___|___	05	05	___|___	
06		___|___/ ___|___/___|___	___|___	___|___	06	06	___|___	
07		___|___/ ___|___/___|___	___|___	___|___	07	07	___|___	
08		___|___/ ___|___/___|___	___|___	___|___	08	08	___|___	
09		___|___/ ___|___/___|___	___|___	___|___	09	09	___|___	
10		___|___/ ___|___/___|___	___|___	___|___	10	10	___|___	
11		___|___/ ___|___/___|___	___|___	___|___	11	11	___|___	
12		___|___/ ___|___/___|___	___|___	___|___	12	12	___|___	
13		___|___/ ___|___/___|___	___|___	___|___	13	13	___|___	
14		___|___/ ___|___/___|___	___|___	___|___	14	14	___|___	
15		___|___/ ___|___/___|___	___|___	___|___	15	15	___|___	
16		___|___/ ___|___/___|___	___|___	___|___	16	16	___|___	
17		___|___/ ___|___/___|___	___|___	___|___	17	17	___|___	

Section 1: Household Roaster

					For persons 12 years and over					
HR01	**HR02**	**HR10**	**HR11**	**HR12**	**HR13**	**HR14**	**HR15**		**HR16**	
Line no. Circle no. of respond -ent	Names of usual HH residents (Full names) Please give me the names of the persons who usually live in your HH including children and infants, starting with the head of HH.	What is the relationship of (name) to the head of HH? 01 Head of HH 02 Husband/ Wife 03 Son/ Daughter 04 Father/ Mother 05 Brother/ Sister 06 Grandfather/ mother 07 Grandchild 08 Daughter/ Son-in-law 09 Other Relative 10 Non Relative	Is (name) Male or Female? 1 Male 2 Female	Does (name) have health insurance? 1 Yes, Governmental health insurance 2 Yes, Military health insurance 3 Yes, UNRWA health insurance 4 Yes, Social welfare health insurance 5 Yes, Private insurance 6 Without insurance	What is (name's) current marital status? 1 Never married 2 Legally married 3 Currently married 4 Divorced 5 Widowed 6 Separated	What is the educational status of (name)? 1 Illiterate 2 Can read and write 3 Elementary 4 Preparatory 5 Secondary 6 Associate diploma 7 Bachelor 8 High diploma 9 Master 10 Ph. D. 98 DK. ??	Employment status: 1 Employed from 1-14 hours 2 Employed for 15 hours or more 3 Unemployed, has ever worked 4 Unemployed, has never worked 5 Full time student 6 Housewife 7 Unable to work 8 Doesn't work and doesn't seek job. 9 Other ***Interviewer: If answer from 4 to 9 ⇒ h01***		What is the occupation of (name)? ***Interviewer: Ask this question if the person is working or unemployed ever worked.***	
							Pre-	Currently	Profession	Code
01		_____	___	___	___	_____	___	___		
02		_____	___	___	___	_____	___	___		
03		_____	___	___	___	_____	___	___		
04		_____	___	___	___	_____	___	___		
05		_____	___	___	___	_____	___	___		
06		_____	___	___	___	_____	___	___		
07		_____	___	___	___	_____	___	___		
08		_____	___	___	___	_____	___	___		
09		_____	___	___	___	_____	___	___		
10		_____	___	___	___	_____	___	___		
11		_____	___	___	___	_____	___	___		
12		_____	___	___	___	_____	___	___		
13		_____	___	___	___	_____	___	___		
14		_____	___	___	___	_____	___	___		
15		_____	___	___	___	_____	___	___		
16		_____	___	___	___	_____	___	___		
17		_____	___	___	___	_____	___	___		

Interviewer: To confirm that you recorded all HH members, ask this question: Is there any other HH member who usually lives in your household such as children or infants not recorded, or is there any member of HH usually live in your HH, but he/she is currently absent or abroad for a limited period of time? 1. Yes 2. No If yes add their names to the list and ask about them.

Section II: Dwelling & Household Economic Status

H01	Line No. of respondent	**Name of person: ……**	|__|__|
H02	**Type of dwelling you are living in?**	1. Villa 2. House 3. Apartment 4. Separate Room 5. Tent 6. Marginal 7. Other/Specify	|__|
H03	How many rooms are there in your dwelling?	Number of rooms	|__|__|
H04	**Now I want to ask you few questions about dwelling you are living in.** What is the main source of drinking water for members of your HH.	**1. Piped into dwelling** 2. Piped into yard 3. Public tap 4. Rain water collection with connection inside dwelling 5. Rain water collection without connection inside dwelling 6. Springs/ streams 7. Tanker truck 8. Bottled water 9. Other (specify) _____	|__|
H05	What is the type of sewage in the household?	1. Public sewage system 2. Cesspit 3. Other 4. No sewage system	|__|
H06	What kind of toilet facility does your household use most?	1. Flush toilet 2. Traditional toilet 3. Both 4. Other (specify) 5. No facility	|__|
H07	Does your household possess the following? 1. Yes ***2.*** No	A. Private car B. Solar boiler C. Jawwal/Israeli mobile phone D. Satellite E. Computer F. Dish washing machine G. TV H. Video I. Internet J. Clothes drying machine K. Automatic washing machine L. Radio M. Microwave	|__| |__| |__| |__| |__| |__| |__| |__| |__| |__| |__| |__| |__|

H08	**What is your main source of income?**	Pre-Intifada |__|__|	Currently |__|__|	***Choose one source from the list in question H09***
H09	What are the secondary sources of income? 1. Yes 2. No ***Interviewer: The selected main source should not be considered as secondary source.***	|__| |__| |__| |__| |__| |__| |__| |__| |__| |__|	|__| |__| |__| |__| |__| |__| |__| |__| |__| |__|	1. Farming, animal breeding and fishing 2. Household projects 3. Wages and government salaries 4. Wages and private sector salaries 5. Wages from Israeli work sector 6. Receiving remittances (internal) 7. Receiving remittances (abraod) 8. Receiving social aids 9. UNRWA wages and salaries 10. Others 11. Don't have source of income

H10	**Did your family face any difficulties in obtaining food supplies during the Intifada?**	**1. Yes, always** **2. Yes, some times** **3. No** (Skip to H12)	|__|
H11	**Was that due to:** **1. Yes** **2. No**	A. Siege B. Curfew C. Loss of main source of income D. Others/Specify	|__
__
__
__	
H12	When you compare the nutritional intake of your family between the period before the Intifada and currently, how did it affect the following? 1. Yes, decreased 2. Not affected 3. Yes, Increased **If the answer 2 or 3 skip to H14**	A. Food quality B. Monthly consumed meat (meat, fish, chicken) C. Monthly consumed fruit D. Monthly consumed milk and dairy	|__
__
__
__	
H13	In order to adapt to the decrease in food cosumption, does your family …… 1. Yes 2. No 3. Not applicable	A. Borrow money B. Sell from its savings C. Depend mainly on food aids	|__
__
__	
H14	Did you have a home garden farmed during the Intifada, or are you currenlty farming it with fruits and vegetables?	1. Yes 2. No **(skip to H16)**	|__|
H15	If the answer yes, what are you doing with the products?	1. Household use 2. Selling 3. Selling some and using the rest 4. Others/specify……..	|__|
H16	Does your household breed the following animals? 1. Yes 2. No ***Interviewer: If all answers are (no), then go to the next part.***	**Type** A. Cows |__| B. Chicken |__| C. Goat |__| D. Sheep |__| E. Poultry |__| F. Rabbits |__| G. Others/specify…… |__|	**Number** |__|__||__|__||__
__	__		__	__		__
__	__		__	__		__
__	__		__	__		__
__	__		__	__		__
__	__		__	__		__
__	__		__	__		__	
H17	**What are you doing with their products?**	1. Household use 2. Selling 3. Selling some and using the rest 4. Others/specify……..	|__|

Palestinian National Authority
Palestinian Central Bureau of Statistics

Palestinian National Authority
Palestinian Central Bureau of Statistics
Nutrition Survey- 2002

Data collected through this survey is for statistical purposes only and considered as confidential (Based on the General Statistics Law 2000)

IDH00- Questionnaire serial number ☐☐☐	**IDH05-** Number of HH in the building _____ ☐☐
IDH01- Governorate _____	**IDH06-** Name of HH head _____
IDH02- Locality _____ ☐☐☐☐☐☐	**IDH07-** Cell code ☐☐
IDH03- EA code of locality ☐☐☐	**IDH08-** Is HH in HH list: 1.Yes 2. No ☐
IDH04- Building number ☐☐☐	**IDH09-** (if answer in IDH07 is Yes) HH Number in list ☐☐☐

Interview Record

IR1- Visits schedule	Day	Month	**Year**	
	☐☐	☐☐	☐☐	First visit
	☐☐	☐☐	☐☐	Second visit
	☐☐	☐☐	☐☐	Third visit

IR2- Total number of visits ☐

IR3- Interview Result

1	Interview is completed
2	No eligible respondent at home at time of visit
3	Non at home
4	Refusal
5	Dwelling is vacant
6	Unit does not exist
7	Other (Specify) _____

IR4- Total number of mothers or caretakers	**IR5- Total number of interviewed mothers** ☐☐
IR6- Line number of eligible woman from HH listing	IR7- Total number of eligible women 15-49 years
IR8- Total number of interviewed eligible women 15-49 years	

☐ *To the interviewer: please put sign (X) inside the square if you have used an additional questionnaire*

Section III B: Mothers

Interviewer: The following questions for mothers or caretakers with children aged 6-59 months, use additional questionnaire if there is more than one mother with eligible children

W0A	*Interviewer: Skip to HR08* ***1. There are eligible women (continue) 2. No eligible women (end)***	⎵⎵	

W00	**Name of mother or caretaker from hr02**		
W01	**Line No. of mother or caretaker from hr08**	⎵⎵⎵⎵	
W02	**Has your family faced any difficulties in obtaining health services for children during the intifada?**	1. Yes **2.** No **(Skip to W04)** 3. No need **(Skip to W04)**	⎵⎵
W03	Was that due to? 1. Yes 2. No	a. Israeli closure b. Curfew c. Inability to pay d. No service e. Health service is far f. No medical staff g. Other/specify…….	⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵
W04	**Has your family faced any difficulties in obtaining vaccinations for children during the intifada at time due to the following?** **1. Yes** **2. No** **3. Not applicable**	A. Inability to reach the clinic due to Israeli check points. B. No vaccine C. No medical staff D. Child was sick E. Mother delayed for various causes F. Other/specify…….	⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵
W05	When your child became sick, and needed treatment, did you reach the following easily? 1. Yes 2. No	A. Hospital B. Health center C. Doctor clinic D. Pharmacy	⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵
W06	When your child becomes sick, and needs treatment, what is the preferred health service that you choose?	1. Governmental hospital 2. Governmental health center/MCH 3. UNRWA centers 4. Private clinic/Physician 5. Non-governmental health centers 6. Pharmacy 7. Other/specify……..	⎵⎵
W07	Did you receive any time health education on child nutrition from the following? 1. Yes 2. No	A. Qualified medical staff B. Mother/Mother in law/Friends C. Mass media D. Other/specify…….	⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵
W08	**In your opinion, at what age should the child receive the following?** ***Interviewer: Record child age in complete months in opposite to each type of food. Record 99 in case the mother doesn't know***.	1. Milled rice 2. Cerelac 3. Bread 4. Meat/Chicken/Liver 5. Egg 6. Fruits 7. Vegetables 8. Fruit juice 9. Chamomile/Anise/Herbals 10. Tea	⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵

W09	**Does the following cause anemia among children?** 1. Yes 2. No 3. DK	1. Not taking meat/liver/chicken 2. Not taking green vegetables 3. Not taking legumes 4. Drinking too much tea 5. Parasitic infection 6. Not taking eggs 7. Taking confectionaries/sweets 8. Not drinking milk 9. Others/specify	|__| |__| |__| |__| |__| |__| |__| |__| |__|
W10	Does the following prevent children from anemia? 3. Yes 4. No 5. DK	A. Taking meat/chicken/liver B. Taking green vegetables C. Taking eggs D. Drinking juice E. Taking iron syrup F. Drinking milk G. Others/specify……..	|__| |__| |__| |__| |__| |__| |__|

Section IIIA: Heamoglobine level for women 15-49 years

WH01	***Interviewer: Now I will measure your Hb level in the blood as part of this survey, in order to study malnutrition and anemia indicators, since anemia is considered one of the main health problems that women and children face, that may have resulted from malnutrition. I will take a drop of blood from your finger and you will get the result soon, taking into consideration the confidentiality of the data***

			First woman	Second	Third
WH01	Name of eligible woman (15-49 years) from hr02				
WH02	**Line No. from hr01**				
WH03	**What is your marital status?**	1. Single **(Skip to WH09)** 2. Married 3. Divorced 4. Widowed	⎿⎽|	⎿⎽|	⎿⎽|
WH04	Have you ever been pregnant?	1. Yes 2. No **(Skip to WH06)**	⎿⎽|	⎿⎽|	⎿⎽|
WH05	How old were you with your first pregnancy	Age in complete years	⎿⎽⎿⎽|	⎿⎽⎿⎽|	⎿⎽⎿⎽|
WH06	Interviewer: only for married women. Are you currently pregnant?	1. Yes 2. No **(Skip to WH09)**	⎿⎽|	⎿⎽|	⎿⎽|
WH07	How many months pregnant are you?	Number of months 99. DK	⎿⎽⎿⎽|	⎿⎽⎿⎽|	⎿⎽⎿⎽|
WH08	How many pregnancies did you have during your reproductive life, including abortions?	Number of pregnancies	⎿⎽⎿⎽|	⎿⎽⎿⎽|	⎿⎽⎿⎽|
WH09	Are you currently receiving iron tablets?	1. Yes 2. No **(Skip to WH11)**	⎿⎽|	⎿⎽|	⎿⎽|
WH10	For how many days have you received iron tablets?	Duration in days…	⎿⎽⎿⎽⎿⎽|	⎿⎽⎿⎽⎿⎽|	⎿⎽⎿⎽⎿⎽|
WH11	Did you agree to test Hb in your blood?	1. Yes, agree 2. No, disagree **(Skip to the second woman, if there is no other woman go to the next section)**	⎿⎽|	⎿⎽|	⎿⎽|
WH12	Hb level in the blood g/dl		⎿⎽⎿⎽·⎿⎽|	⎿⎽⎿⎽·⎿⎽|	⎿⎽⎿⎽·⎿⎽|
WH13	Result	1. Hb level test was done 2. Others/specify……	⎿⎽|	⎿⎽|	⎿⎽|
WH14	Name of person who measured Hb				

Palestinian National Authority
Palestinian Central Bureau of Statistics

Palestinian National Authority
Palestinian Central Bureau of Statistics
Nutrition Survey-2002

Data collected through this survey is for statistical purposes only and considered as confidential (Based on the General Statistics Law 2000)

IDH00- Questionnaire serial number ☐☐☐	**IDH05**- Number of HH in the building _____
IDH01- Governorate _____	**IDH06**- Name of HH head _____
IDH02- Locality _____ ☐☐☐☐☐☐	**IDH07**- Cell code ☐☐
IDH03- EA code of locality ☐☐☐	**IDH08**- Is HH in HH list: 1.Yes 2. No
IDH04- Building number ☐☐☐	**IDH09**- (If answer in IDH08 is Yes) HH Number in list ☐

Interview Record

	Day	Month	Year	
CIR01- Visits schedule	☐☐	☐☐	☐☐	First visit
	☐☐	☐☐	☐☐	Second Visit
	☐☐	☐☐	☐☐	Third Visit

CIR02- Total number of visits ☐

CIR03- Interview Result ☐

1	Interview is completed
2	No eligible children at home at time of visit
3	Non at home
4	Refusal
5	Dwelling is vacant
6	Unit is not present
7	Other (Specify) _____

CIR04 – Total number of children age 6-59 months	**CIR05**- Line number of mother or caretaker ☐☐
CIR06- Total number of children aged 6-59 months and interviewed	

☐ *To the interviewer: please put sign (X) inside the square if you have used an additional questionnaire*

Section IV: Child Health

For children aged 6-59 months

			Last child	**Next to last child**	**Second child next to last**
CH01	Mother or caretaker line No. from HR08		__| __|	__| __|	__| __|
CH02	Child line No. from HR01		__| __|	__| __|	__| __|
CH03	Child name from HR02				
CH04	Child sex from HR11		__| __|	__| __|	__| __|
CH05	Child date of birth in Day/Month/Year from HR03		…../…./……	…../…./……	…../…./……
CH06	Birth order		__| __|	__| __|	__| __|
CH07	Date of birth for previous child ***Interviewer: Ask mother about date of birth for the child born before (child name) including dead children.***		…../…./……	…../…./……	…../…./……
CH08	Date of birth for next child ***Interviewer: Ask mother about date of birth for the child born after (child name) including dead children.***		…../…./……	…../…./……	…../…./……
CH09	Does (child name) suffer from one of the following chronic diseases? 1. Yes 2. No 3. DK	A. Diabetes B. Cardiac diseases C. Asthma D. Epilepsy E. Congenital anomalies /inherited diseases F. Others/specify	__| __| __| __| __| __|	__| __| __| __| __| __|	__| __| __| __| __| __|
CH10	Was duration of pregnancy less than 37 weeks?	1. Yes 2. No 3. DK	__|	__|	__|
CH11	Was (name) weighed at birth?	1. Yes…. 2. No…. **(Skip to CH13)**	__|	__|	__|
CH12	How much did (name) weigh at birth?	Grams from card Grams from recall DK	1 __ __ __ __| 2 __ __ __ __| 3 |9 _ |9 _ | _ 9 |9 _|	1 __ __ __ __| 2 __ __ __ __| 3 |9 _ |9 _ | _ 9 |9 _|	1 __ __ __ __| 2 __ __ __ __| 3 |9 _ |9 _ | _ 9 |9 _|
CH13	In the previous two weeks, did (name) suffer from any illness affected his health status?	1. Yes 2. No 3. DK	__|	__|	__|

			Last child	Next to last child	Second child next to last
CH14	Did (child name) suffer from parasitic infection during the last six months	1. Yes 2. No 3. DK	⎿⎿| Freq. ⎿⎿| ⎿⎿|	⎿⎿| Freq. ⎿⎿| ⎿⎿|	⎿⎿| Freq. ⎿⎿| ⎿⎿|
CH15	**Has (name) received vitamin A/D drops?** ***Interviewer: Skip to CH17 if the answer 2 or 3***	1. Yes 2. No 3. DK	⎿⎿|	⎿⎿|	⎿⎿|
CH16	For how long did (name) continue receiving vitamin A/D drops? *Record (00) if the period is less than one month*	Number of months Child still receiving vitamin A/D DK	|⎿⎿| ⎿⎿| 95 98	|⎿⎿| ⎿⎿| 95 98	|⎿⎿| ⎿⎿| 95 98
CH17	Has (name) received iron syrup? *Interviewer: Skip to CH19 if the answer 2 or 3*	1. Yes 2. No 3. DK	⎿⎿|	⎿⎿|	⎿⎿|
CH18	For how long did (name) continue receiving iron syrup? *Record (00) if the period less than one month*	Number of months Child still receiving iron syrup DK	|⎿⎿| ⎿⎿| 95 98	|⎿⎿| ⎿⎿| 95 98	|⎿⎿| ⎿⎿| 95 98
CH19	Has (name) received other vitamins other than vitamin A/D? *Interviewer: Skip to CH21 if the answer 2 or 3*	1. Yes 2. No 3. DK	⎿⎿|	⎿⎿|	⎿⎿|
CH20	**For how long did (name) continue receiving vitamins other than vitamin A/D?** ***Record (00) if the period less than one month***	Number of months Child still receiving vitamin DK	|⎿⎿| ⎿⎿| 95 98	|⎿⎿| ⎿⎿| 95 98	|⎿⎿| ⎿⎿| 95 98
CH21	Have you ever breastfed (name)?	1. Yes 2. No **(Skip to CH23)**	⎿⎿|	⎿⎿|	⎿⎿|
CH22	How many months did you breastfeed (name)?	Number of months…… 95. Child still breastfeeding	|⎿⎿| ⎿⎿|	|⎿⎿| ⎿⎿|	|⎿⎿| ⎿⎿|
CH23	Did you feed (name) with any other milk except from your breast?	1. Yes 2. No **(Skip to CH26)**	⎿⎿|	⎿⎿|	⎿⎿|
CH24	How old was (name) when you started giving him other milks except that from your breast?	Month DK	|⎿⎿| ⎿⎿| 98	|⎿⎿| ⎿⎿| 98	|⎿⎿| ⎿⎿| 98

			Last child	Next to last child	Second child next to last
CH25	What type of milk did your child receive? 1. Yes 2. No	A. Child powdered milk B. Powdered milk (Nido) C. Fresh milk D. Manufactured milk	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌
CH26	Has (name) received the following during the first year of his/her age, and how old was (name) when you started giving him/her the food? 1. Yes 2. No 3. DK ***Interviewer: Record child age if the answer is (yes), record (00) if child's age less than one month. Record (99) if the answer (no), and (98) if the answer is (DK).***				
			Age in months	Age in months	Age in months
		A. Milled rice/starch	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		B. Cerelac	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		C. Fruits	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		D. Vegetables	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		E. Meat/chicken/fish	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		F. Eggs	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		G. Family food	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
		H. Others/specify	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌	☐ ⎿⎽⏌⎿⎽⏌
CH27	Does (name) take the following? 1. One time a day 2. 2-3 times and more in a week 3. One time a week 4. One time every two weeks or more 5. Child don't take 6. DK	A. Eggs B. Milk and dairy C. Fresh meat D. Frozen meat E. Liver F. Chicken G. Fresh fish H. Frozen fish I. Legumes J. Green vegetables K. Vegetables L. Fresh fruit/fruit juice M. Bread/Macaroni N. Sweets	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌
CH28	Usually, does (name) drink tea?	1. Yes 2. No **(skip to ch31)**	⎿⎽⏌	⎿⎽⏌	⎿⎽⏌
CH29	Does (name) drink tea with meal or directly after meal?	1. Always 2. Often 3. No	⎿⎽⏌	⎿⎽⏌	⎿⎽⏌
CH30	How many times does (name) drink tea daily?	No. of times…… 98. DK	⎿⎽⏌⎿⎽⏌	⎿⎽⏌⎿⎽⏌	⎿⎽⏌⎿⎽⏌
CH31	Is (name) in comparison with his generation: 1. Yes 2. NO 3. DK ***If the answer 2 or 3 skip to next section***	A. Thin B. Short	⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌
CH32	Did you consult the following? 1. Yes 2. No	A. Qualified medical staff B. Nutritionist C. Others/specify	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌	⎿⎽⏌ ⎿⎽⏌ ⎿⎽⏌

Section V: Anthropometry and Hb level for children aged 6-59 months

Interviewer: Measurement of height and weight and hemoglobin level is taken for all children aged 6-59 months. Use additional questionnaire if there were more than 3 children.

Interviewer: Now I will measure the height and weight and hemoglobin level for your children aged 6-59 months, as part of this survey, in order to measure malnutrition indicators, since anemia is considered one of the health problems children face that may result from malnutrition. I will take a drop of blood from the child's finger and you will get the result soon, taking into consideration the confidentiality of the data.

			Last birth	**Next to last birth**	**Second birth next to last**
M01	Mother line number from HR01		|___|___|	|___|___|	|___|___|
M02	Child line number from HR01		|___|___|	|___|___|	|___|___|
M03	Child name from HR02		_____	_____	_____
M04	Child birth date from HR03	Day Month Year	|__|__| |__|__| |__|__|__|__|	|__|__| |__|__| |__|__|__|__|	|__|__| |__|__| |__|__|__|__|
M05	Child's length or height (in centimeters)		|__|__|__| . |__|	|__|__|__| . |__|	|__|__|__| . |__|
M06	Is child height measured lying down/ standing up?	1. Lying down 2. Standing up	|__|	|__|	|__|
M07	Child's weight in kilograms		|__|__| . |__|	|__|__| . |__|	|__|__| . |__|
M08	**Result:** 1. Weight and height is measured 2. Weight is measured only 3. Height is measured only 4. Child not present 5. Child refused 6. Mother/ caretaker refused 7. Other (specify) _____		|__|	|__|	|__|
M09	Name and ID number of person who measured the child _____ |___|___|___|__| |___|___|___|___|			Name and ID number of the assistant _____	

		Last birth	Next to last birth	Second birth next to last
CHB01	Do you agree to test Hb level for your child? 1. Yes, agree 2. No, disagree **(skip to the second child or end)**	|__|	|__|	|__|
CHB02	Hb level in the blood g/dl	|__|__| . |__|	|__|__| . |__|	|__|__| . |__|
CHB03	Result 1. Hb level test was done 2. Child was not at home 3. Child refused 4. Child was sick 5. Other/specify…….	|__|	|__|	|__|
CHB04	Name of the person who measured Hb level			

Interviewer's Notes

Notes on respondents: ----------

Notes on certain questions:----------

Any other notes: ----------

Interviewer's Name: ---------- Date: / /
Interviewer's Code: ----------

Supervisor's Notes

Supervisor 's Name: ---------- Date: / /
Supervisor's Code: ----------

Editor's Notes

Editor 's Name: ---------- Date: / /
Editor 's Code:----------