PREVALENCE & DETERMINANTS OF MALNUTRITION & INTESTINAL INFECTIONS AMONG CHILDREN AND THEIR MOTHERS IN THE JORDAN VALLEY, OCCUPIED PALESTINIAN TERRITORY
Introduction

The Jordan Valley comprises approximately 30% of the land area of the West Bank, occupied Palestinian territory (OPT), and is home to an estimated 60,000 Palestinians. The population of the Jordan Valley, much of which lies within Israeli-controlled Area C, is consistently exposed to movement restrictions, limited access to potable water, poverty, persistent threats of forced relocation and home demolitions, and lack of minimal human security measures, facilitated by the Israeli occupation. These factors have a significant impact on healthcare quality and access, affecting the overall health status of the population. Because of these unique political, economic, and social circumstances, there is an urgent need to better characterize and improve the health status of the population in the Jordan Valley.

The Palestinian National Institute of Public Health conducted a household survey and gathered data at the child, maternal, household, and community levels to examine factors associated with our primary outcomes of interest: child stunting, underweight, overweight / obesity, intestinal infections, anemia, maternal anemia, and maternal overweight / obesity. In addition to anthropometric measures, we examined clinical data derived from stool and blood samples. Our final study sample consisted of 1,501 children and 587 mothers from 25 localities of the Jericho, Nablus, and Tubas districts.
Our Aim
To examine the prevalence and determinants of malnutrition and intestinal infections among children and their mothers in the Jordan Valley.
THE SAMPLE

1501 CHILDREN
587 MOTHERS
25 LOCALITIES

603 Children
1-4 Years

898 Children
5-12 Years

THE POVERTY LINE IN PALESTINE

67%

2000 NIS
2293 NIS

*Monthly income per household
(NIS: New Israeli Shekel)
Malnutrition & Intestinal Infections among children in the Jordan Valley

Total sample of children in Jordan Valley 1501

- 3% Obesity
- 4% Underweight
- 6% Overweight
52% ANEMIA

%2 WASTING

11% STUNTING

17% PARASITIC INFECTION
Stunting

Stunting: Low height-for-age as compared to the global median for children of the same age.

7% of children under 5 in Palestine are stunted (PCBS, 2014)

11% Stunted
169 Children
3% Severely Stunted
48 Children

Children Under 5
16% TOTAL STUNTING
6% Severely Stunted

Children Above 5
8% TOTAL STUNTING
1% Severely Stunted
% Stunting per district

Bedouin Villages

Stunting by residence

Displaced Non-displaced

Stunting by displacement status

High School or More No schooling or less than high school

Stunting by maternal education

Nablus Tubas Jericho

13% 12% 11%

19% 10% 9%

34% 17%
Underweight

Underweight: Low weight for height for children up to 10 years old

4% Underweight
46 Children

Children Under 5
3%

Children Above 5
4%
Underweight among children by residence:
- Bedouin: 8%
- Villages: 3%
- Camps: 3%

Underweight among children by displacement status:
- Displaced: 5%
- Non-displaced: 3%

Underweight among children by maternal education:
- High school or more: 4%
- No schooling or less than high school: 2%
Obesity & Overweight

Obesity: Very heavy weight for height (BMI-for-age Z-Score > 3+)
Overweight: Heavy weight for height (BMI-for-age Z-Score > 2+)

3% Obesity
44 Children

6% Overweight
95 Children

Children Under 5
12%
Children Above 5
7%

Obesity / Overweight
% Obesity & Overweight per district

Obesity & overweight among children by residence

- Bedouin: 13%
- Villages: 7%
- Camps: 12%

Obesity & overweight among children by displacement status

- Displaced: 7%
- Non-displaced: 10%

Obesity & overweight among children by maternal weight

- Overweight: 10%
- Not overweight: 7%
Anemia: Hemoglobin (Hb) levels below established WHO cut-off levels.

- For children under 5 Hb level <11g / dl
- For children 5-11 years Hb <11.5g / dl
- For children 12 years Hb <12g / dl

Anemia among children above 5
- 48% of children above 5 have anemia
  - 23% Mild
  - 25% Moderate
  - 0.2% Severe

Anemia among children under 5
- 57% of children under 5 have anemia
  - 27% Mild
  - 29% Moderate
  - 2% Severe

52% Anemia
778 Children
% Childhood Anemia per district

- Tubas: 43%
- Nablus: 48%
- Jericho: 54%

Anemia among children by residence

- Bedouin: 55%
- Villages: 55%
- Camps: 43%

Anemia among children by displacement status

- Displaced: 51%
- Non-displaced: 49%

Anemia among children by maternal education

- High school or more: 53%
- No schooling or less than high school: 50%
Intestinal Infections

Any intestinal infection defined as any positive reading for any parasitic or worm infection

- 17% Infections
  - 248 Children

- Children under 5:
  - 16%
  - 8%

- Children above 5:
  - 2% Worms

- GIARDIA CYST: 8.9%
- GIARDIA TROPHOZOITE: 0.9%
- ENTAMOEBA CYST: 5.1%
- ENTAMOEBA TROPHOZOITE: 1.0%
- SALMONELLA: 0.9%
- SHIGELLA: 0.4%
- ROTAVIRUS: 0.9%
- WORM-ENTERBIUS (PINWORM): 0.4%
- WORM-ASCARIS: 0.1%
- WORM-H.NANA: 0.1%
Child intestinal infection by residence:

- Bedouin: 31%
- Villages: 17%
- Camps: 10%

Child intestinal infection by displacement status:

- Displaced: 25%
- Non-displaced: 15%

Child intestinal infection by maternal education:

- High school or more: 18%
- No schooling or less than high school: 12%
Maternal obesity, overweight, and central obesity

Overweight: Heavy Weight for height (Body Mass Index >25)
Obesity: Very heavy Weight for height (Body Mass Index >30)
Central obesity: Waist circumference > 88cm

TOTAL SAMPLE OF MOTHERS IN JORDAN VALLEY 587
Maternal obesity and central obesity by residence:

- NABLUS: Obese 43%, Centrally obese 57%
- TUBAS: Obese 43%, Centrally obese 70%
- JERICHO: Obese 49%, Centrally obese 69%
- CAMPS: Obese 46%, Centrally obese 77%
- VILLAGES: Obese 40%, Centrally obese 66%
- BEDOUIN: Obese 30%, Centrally obese 47%

Maternal obesity and central obesity by education:

- No schooling or less than high school: Obese 43%, Centrally obese 65%
- High school or more: Obese 33%, Centrally obese 55%
Anemia among Mothers

low hemoglobin (below WHO cut off points)

58.1%

ANEMIA

TOTAL SAMPLE OF MOTHERS IN JORDAN VALLEY 587

Anemia among pregnant
71% of pregnant women have anemia
42% Mild
30% Moderate
0% Severe
85% Take Iron-supplementation

Anemia among non-pregnant
57% of non-pregnant women have anemia
23% Mild
32% Moderate
2% Severe
25% Take Iron-supplementation
Maternal anemia by education

- No schooling or less than high school: 59%
- High school or more: 56%

Maternal anemia by residence

- Nablus: 73%
- Tubas: 53%
- Jericho: 58%
- Camels: 56%
- Villages: 57%
- Bedouin: 69%

% Maternal anemia per district
Double Burden of Malnutrition

Child stunted + overweight/obese
2% 25 children

Child anemia + overweight/obese
5% 75 children

Mother anemia + overweight/obese
44% 257 Mothers

Individual - level
Child stunted + mother overweight/obese: 8% (115 children)

Child overweight/obese + mother anemia: 6% (83 children)

Child anemia + mother overweight/obese: 37% (553 children)

Household-level
Political Solution

A political solution is necessary to address the structural barriers - including the persistent exposure to violence meted out by the Israeli occupation - that make full achievement of health difficult at best and unattainable at worst.

Malnutrition & Obesity

The coexistence of malnutrition and obesity among members of the same household presents an important challenge for the Palestinian public health system.
Policy Recommendations

- Governmental and civil society organizations ally to address the root political causes of malnutrition.
- Regular health screenings.
- Improve research on the role of family food environments.
- Promote targeted maternal education.
- Improve research to better understand the efficacy of interventions.