



National Nutrition
Institute



World Food Programme
Egypt

Nutritional Assessment of WFP Beneficiaries In Noubarea and Matrouh Areas

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Contents

- List of Acronyms3**
- Study Objective5**
- Sample Size5**
- Methodology5**
- Results6**
 - 1. The Nutritional and Health Status of Household Heads and Mothers 6
 - 1.1. The Body Mass Index (BMI) of Household Heads and Mothers.....6
 - 1.2. The Prevalence of Diet Related Non-communicable Diseases Among Household Heads and Mothers 7
 - 1.3. The Prevalence of Micronutrient Deficiency Manifestations in Beneficiary Families8
 - 1.4. The Physiological and Hematological Status of Mothers 9
 - 2. The Nutritional and Health Status of Beneficiary Children (6m - 5 years old) 11
 - 2.1. The Nutritional Status of Beneficiary Children 11
 - 2.2. The Hematological Status of Beneficiary Children 13
 - 2.3. Vaccination and Vitamin A Supplementation of Beneficiary Children 13
 - 2.4. The Prevalence of Morbidity Diseases Among Children..... 14
- Annex.....17**
 - Nutritional Survey Questionnaire..... 17

Table of Tables

Table 1. Distribution of household heads and mothers by BMI.....	6
Table 1a. Statistical significance of differences between Noubarea and Matrouh regarding BMI of household heads and mothers	6
Table 2. Distribution of diet related non-communicable diseases (NCD) in household heads and mothers	7
Table 2a. Statistical significance of differences between Noubarea and Matrouh regarding diet related non-communicable diseases among household heads and mothers	8
Table 3. Distribution of micronutrient deficiency manifestations among household heads, mothers and children <5 years	8
Table 3a. Statistical significance of differences between Noubarea and Matrouh regarding the distribution of micronutrient deficiency manifestations among household heads and mothers	9
Table 4. Distribution of mothers by physiological status.....	9
Table 5. Distribution of pregnant and non-pregnant mothers by prevalence of anemia	10
Table 5a. Statistical significance of differences between Noubarea and Matrouh regarding anemia prevalence in pregnant and non-pregnant mothers	10
Table 6. Distribution of beneficiary children by gender and height-for-age (Ht/A)	11
Table 6a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of children according to Ht/A.....	11
Table 7. Distribution of beneficiary children by gender and weight-for-age (Wt/A)	12
Table 7a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of children according to Wt/A	12
Table 8. Distribution of beneficiary children by gender and weight-for-height (Wt/Ht).....	12
Table 8a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of children according to Wt/Ht.....	13
Table 9. Distribution of hemoglobin values in beneficiary children	13
Table 9a. Statistical significance of differences between Noubarea and Matrouh regarding prevalence of anemia in children	13
Table 10. Distribution of vaccination coverage in beneficiary children by recommended vaccination	14
Table 10a. Statistical significance of differences between Noubarea and Matrouh regarding vaccination coverage of children	14
Table 11. Distribution of vitamin A supplementation among beneficiary children	14
Table 11a. Statistical significance of differences between Noubarea and Matrouh regarding vitamin A supplementation for children	14
Table 12. Distribution of morbidity in beneficiary children in the month prior to the survey	15
Table 12a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of morbidity in beneficiary children in the month prior to the survey	16

List of Acronyms

BMI	body mass index
DM	diabetes mellitus
Hb	hemoglobin
HH	household
M&E	monitoring and evaluation
NCD	Non-communicable disease
NNI	National Nutrition Institute
RBM	results-based management
SD	standard deviation
WFP	World Food Programme
WHO	World Health Organisation

Study Objective

The objective of the study was to assess the nutritional status of WFP beneficiaries in Noubarea and Matrouh areas.

Sample Size

The sampling and design of the study were determined by WFP staff according to beneficiary data for Noubarea and Matrouh areas.

Methodology

The health and nutritional status of WFP beneficiaries in Noubarea and Matrouh were assessed through:

- Anthropometric assessment (weight and height) of children from six months to five years of age
- Anthropometric assessment (weight and height) of women
- Anthropometric assessment (weight and height) of men
- Hemoglobin (Hb) test of around 50 percent of children and mothers using screening tests.

The team conducting the field work faced some problems whilst completing the survey questionnaires. The field coordinators collecting the data often only found the male WFP beneficiaries, not entire families. To overcome this obstacle, the NNI team tried to visit beneficiary households to examine the mothers and children. In some cases this was not possible, however, as the households were too far away or mothers were working away from their homes.

Results

1. The Nutritional and Health Status of Household Heads and Mothers

1.1. The Body Mass Index (BMI) of Household Heads and Mothers

The nutritional status of adult beneficiaries was assessed by determining the weight-for-height indicator and BMI of household heads and mothers. As shown in Table 1, the total number of adult beneficiaries examined in Noubarea was 50 household heads and 47 mothers, while the total number of adult beneficiaries examined in Matrouh was 60 household heads and 53 mothers. Only two percent of the household heads and one percent of the mothers in Noubarea were considered underweight, while 1.9 percent of the mothers and no household heads in Matrouh were considered underweight.

On the other hand, more than half of the mothers in Noubarea were pre-obese or obese (17% pre-obese, 31.9% obese class I, 19.1% obese class II and 12.8% obese class III). In Matrouh around one-third of the mothers was pre-obese (35.8%), and one third obese (26.4% obese class I, 7.5% obese class II, and 3.8% obese class III).

Table 1. Distribution of household heads and mothers by BMI

BMI	Beneficiaries Living in Noubarea				Beneficiaries Living in Matrouh			
	Household Heads		Mothers		Household Heads		Mothers	
	No.	%	No.	%	No.	%	No.	%
<18.5 Underweight	2	4.0	1	2.1	0	0.0	1	1.9
18.5 – 24.9 Normal	27	54.0	8	17.0	24	40.0	13	24.5
25 – 29.9 Pre-Obese	11	22.0	8	17.0	21	35.0	19	35.8
30 – 34.9 Obese Class I	8	16.0	15	31.9	12	20.0	14	26.4
35 – 39.9 Obese Class II	2	4.0	9	19.1	3	5.0	4	7.5
≥40 Obese Class III	0	0.0	6	12.8	0	0.0	2	3.8
Total	50	100.0	47	100.0	60	100.0	53	100.0

Table 1a. Statistical significance of differences between Noubarea and Matrouh regarding BMI of household heads and mothers

	χ^2	df	P value	Significance*
Household heads	5.437	4	0.245	NS
Mothers	9.303	5	0.098	NS

*S = significant, HS = highly significant, NS = not significant

There was no statistically significant difference regarding BMI of household heads or mothers in Noubarea and Matrouh.

1.2. The Prevalence of Diet Related Non-communicable Diseases Among Household Heads and Mothers

As shown in Table 2, diet related non-communicable diseases were more prevalent in household heads and mothers in Matrouh than in household heads and mothers in Noubarea.

Diabetes mellitus (DM) was prevalent in 6.0 percent of household heads and 6.4 percent of mothers in Noubarea areas, while the prevalence of DM in Matrouh was 3.3 percent in household heads and 7.5 percent in mothers.

Hypertension was prevalent in 6.0 percent of household heads and 2.1 percent of mothers in Noubarea. The prevalence of hypertension was higher in Matrouh – 11.7 percent of household heads and 30.2 percent of mothers.

No beneficiaries in either area reported any history of cardiovascular diseases.

Table 2. Distribution of diet related non-communicable diseases (NCD) in household heads and mothers

Diet Related NCD		Beneficiaries Living in Noubarea				Beneficiaries Living in Matrouh			
		Household Heads		Mothers		Household Heads		Mothers	
		No.	%	No.	%	No.	%	No.	%
Diabetes Mellitus	Yes	3	6.0	3	6.4	2	3.3	4	7.5
	No	4	8.0	2	4.3	36	60.0	12	22.6
	Unknown	43	86.0	42	89.4	22	36.7	37	69.8
	Total	50	100.0	47	100.0	60	100.0	53	100.0
Hypertension	Yes	3	6.0	1	2.1	7	11.7	16	30.2
	No	7	14.0	5	10.6	32	53.3	13	24.5
	Unknown	40	80.0	41	87.2	21	35.0	24	45.3
	Total	50	100.0	47	100.0	60	100.0	53	100.0
Cardiovascular Diseases	Yes	0	0.0	0	0.0	0	0.0	0	0.0
	No	2	4.0	1	2.1	36	60.0	10	18.9
	Unknown	48	96.0	46	97.9	24	40.0	43	81.1
	Total	50	100.0	47	100.0	60	100.0	53	100.0

Table 2a. Statistical significance of differences between Noubarea and Matrouh regarding diet related non-communicable diseases among household heads and mothers

	χ^2	df	P value	Significance
Household heads				
Diabetes Mellitus	31.939	2	0.000	HS
Hypertension	22.823	2	0.000	HS
Cardiovascular diseases	37.825	1	0.000	HS
Mothers				
Diabetes Mellitus	7.268	2	0.026	S
Hypertension	20.952	2	0.000	HS
Cardiovascular diseases	7.130	1	0.000	S

1.3. The Prevalence of Micronutrient Deficiency Manifestations in Beneficiary Families

Table 3 shows the distribution of micronutrient deficiency manifestations in household heads, mothers and children under five years old. The percentage of cases of vitamin A deficiency manifestations was higher in household heads living in Matrouh than those living in Noubarea.

The prevalence of goiter is minimal in Matrouh, with only one reported case among males and two cases among females. No cases of goiter were detected in Noubarea.

Table 3. Distribution of micronutrient deficiency manifestations among household heads, mothers and children <5 years

Micronutrient Deficiency Manifestations	Beneficiaries Living in Noubarea						Beneficiaries Living in Matrouh					
	Household Heads		Mothers		Children <5 years		Household Heads		Mothers		Children <5 years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Eye Manifestations of Vitamin A Deficiency												
Night Blindness	1	2.0	0	0.0	0	0.0	1	1.7	10	18.9	1	3.3
Conjunctival Xerosis	5	10.0	2	4.3	0	0.0	20	33.3	9	17.0	0	0.0
No vitamin A deficiency manifestations	44	88.0	45	95.7	25	100.0	39	65.0	34	64.2	29	96.7
Goiter Detection												
Grade 0	50	100.0	47	100.0	25	100.0	59	98.3	51	96.2	30	100.0
Grade I	0	0.0	0	0.0	0	0.0	1	1.7	2	3.8	0	0.0
Grade II	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	50	100.0	47	100.0	25	100.0	60	100.0	53	100.0	30	100.0

Table 3a. Statistical significance of differences between Noubarea and Matrouh regarding the distribution of micronutrient deficiency manifestations among household heads and mothers

	χ^2	df	P value	Significance
Household heads				
Night blindness	0.017	1	0.896	NS
Conjunctival xerosis	8.455	1	0.004	S
No vitamin A deficiency manifestations	7.790	1	0.005	S
Grade of Goiter	0.841	1	0.359	NS
Mothers				
Night blindness	9.853	1	0.002	S
Conjunctival xerosis	4.121	1	0.042	S
No vitamin A deficiency manifestations	14.988	1	0.000	HS
Grade of Goiter	1.810	1	0.179	NS

1.4. The Physiological and Hematological Status of Mothers

To identify the hematological status of mothers living in Noubarea and Matrouh, it was essential to first identify their physiological status in terms of pregnancy (Table 4) as WHO guidelines for anemia are different for pregnant and non-pregnant mothers. Around four percent of mothers in Noubarea were pregnant at the time of survey, while 7.5 percent of mothers in Matrouh were pregnant at that time.

Table 4. Distribution of mothers by physiological status

Physiological status of Mothers	Beneficiary Mothers Living in Noubarea		Beneficiary Mothers Living in Matrouh	
	No.	%	No.	%
Pregnant	2	4.3	4	7.5
Lactating	7	14.9	12	22.6
Non-pregnant and Non-lactating	38	80.9	37	69.8
Total	47	100.0	53	100.0

Table 5 shows the hematological status of mothers. The prevalence of anemia was very high in pregnant and non-pregnant mothers in both areas. Prevalence was higher in non-pregnant (including lactating) mothers, possibly because pregnant mothers take more care about the food they eat than non-pregnant mothers, taking preference when there is insufficient food for the entire family.

Table 5. Distribution of pregnant and non-pregnant mothers by prevalence of anemia

Hematological status of Mothers		Beneficiaries Mothers Living in Noubarea		Beneficiaries Mothers Living in Matrouh	
		No.	%	No.	%
Pregnant	Anemic	0	0.0	2	50.0
	Non anemic	2	100.0	2	50.0
	Total	2	100.0	4	100.0
Non-Pregnant	Anemic	23	51.1	35	71.4
	Non anemic	22	48.9	14	28.6
	Total	45	100.0	49	100.0

Table 5a. Statistical significance of differences between Noubarea and Matrouh regarding anemia prevalence in pregnant and non-pregnant mothers

	χ^2	df	P value	Significance
Pregnant Mothers	1.500	1	0.221	NS
Non-pregnant Mothers	4.098	1	0.043	S

The difference between Noubarea and Matrouh regarding hematological status was not statistically significant for pregnant mothers ($p=0.221$), while the difference was significant for non-pregnant mothers ($p= 0.043$).

2. The Nutritional and Health Status of Beneficiary Children (6m - 5 years old)

2.1. The Nutritional Status of Beneficiary Children

Table 6 shows the distribution of beneficiary children by gender and height-for-age (Ht/A). The prevalence of severe stunting was higher among children in Matrouh than children in Noubarea (20.0% compared to 4.0%). In addition, it was higher for males than females in both areas. The prevalence of moderate stunting was higher among children in Matrouh than in Noubarea (10.0% and 8.0% respectively).

Table 6. Distribution of beneficiary children by gender and height-for-age (Ht/A)

Nutritional Status (Ht/A)	Children of Beneficiaries Living in Noubarea						Children of Beneficiaries Living in Matrouh					
	Males		Females		Total		Males		Females		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Severe stunting <-3SD	1	7.1	0	0.0	1	4.0	4	23.5	2	15.4	6	20.0
Moderate Stunting <-2SD to ≥-3SD	1	7.1	1	9.1	2	8.0	2	11.8	1	7.7	3	10.0
Normal -2 to +2SD	12	85.7	10	90.9	22	88.0	11	64.7	9	69.2	20	66.7
Tall > +2SD	0	0.0	0	0.0	0	0.0	0	0.0	1	7.7	1	3.3
Total	14	100.0	11	100.0	25	100.0	17	100.0	13	100.0	30	100.0

Table 6a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of children according to Ht/A

	χ^2	df	P value	Significance
Male children	1.904	2	0.386	NS
Female children	2.906	3	0.406	NS
Total	4.449	3	0.217	NS

The differences between the two areas were not statistically significant.

Table 7 shows the distribution of beneficiary children by gender and weight-for-age (Wt/A).

The percentage of severely underweight children was higher in Matrouh (10%) than in Noubarea (4.0%). Prevalence was higher among females in both areas.

The percentage of moderately underweight children was higher in Matrouh than in Noubarea (26.7% and 4.0% respectively), with a higher prevalence among male children.

Table 7. Distribution of beneficiary children by gender and weight-for-age (Wt/A)

Nutritional Status (Wt/A)	Children of Beneficiaries Living in Noubarea						Children of Beneficiaries Living in Matrouh					
	Males		Females		Total		Males		Females		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Severely Underweight <-3SD	0	0.0	1	9.1	1	4.0	1	5.9	2	15.4	3	10.0
Moderately Underweight <-2SD to ≥-3SD	1	7.1	0	0.0	1	4.0	5	29.4	3	23.1	8	26.7
Normal Wt/A -2SD to +2SD	11	78.6	9	81.8	20	80.0	9	52.9	8	61.5	17	56.7
Overweight > +2SD	2	14.3	1	9.1	3	12.0	2	11.8	0	0.0	2	6.7
Total	14	100.0	11	100.0	25	100.0	17	100.0	13	100.0	30	100.0

Table 7a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of children according to Wt/A

	χ^2	df	P value	Significance
Male children	3.610	3	0.307	NS
Female children	4.255	3	0.235	NS
Total	6.487	3	0.090	NS

The differences were not statistically significant.

Table 8 shows the distribution of beneficiary children by gender and weight-for-height (Wt/Ht). Three children (two females and one male) out of thirty children in Matrouh were severely wasted (<-3SD), while one female child in Noubarea out of 25 children (4.0%) had moderate wasting (<-2SD to ≥-3SD).

Table 8. Distribution of beneficiary children by gender and weight-for-height (Wt/Ht)

Nutrition Status (Wt/Ht)	Children of Beneficiaries Living in Noubarea						Children of Beneficiaries Living in Matrouh					
	Males		Females		Total		Males		Females		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Severe Wasting <-3SD	0	0.0	0	0.0	0	0.0	1	5.9	2	15.4	3	10.0
Moderate Wasting <-2SD to ≥-3SD	0	0.0	1	9.1	1	4.0	0	0.0	0	0.0	0	0.0
Normal -2SD to +2SD	12	85.7	10	90.9	22	88.0	12	70.6	11	84.6	23	76.7
Overweight > +2SD	2	14.3	0	0.0	2	8.0	4	23.5	0	0.0	4	13.3
Total	14	100.0	11	100.0	25	100.0	17	100.0	13	100.0	30	100.0

Table 8a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of children according to Wt/Ht

	χ^2	df	P value	Significance
Male children	1.389	2	0.499	NS
Female children	2.901	2	0.234	NS
Total	4.270	3	0.234	NS

The differences were not statistically significant.

2.2. The Hematological Status of Beneficiary Children

Table 9 shows the distribution of beneficiary children according to their hematological status. Clearly the prevalence of anemia is very high in both areas (96.0% for children in Noubarea, and 100.0% for children in Matrouh).

Table 9. Distribution of hemoglobin values in beneficiary children

Hematological status of Children	Children of Beneficiaries Living in Noubarea		Children of Beneficiaries Living in Matrouh	
	No.	%	No.	%
Anemic Hb <11g	24	96.0	30	100.0
Non Anemic HB ≥11g	1	4.0	0	0.0
Total	25	100.0	30	100.0

Table 9a. Statistical significance of differences between Noubarea and Matrouh regarding prevalence of anemia in children

	χ^2	df	P value	Significance
HB status	1.222	1	0.269	NS

The difference was not statistically significant.

2.3. Vaccination and Vitamin A Supplementation of Beneficiary Children

Table 10 shows the distribution of vaccination coverage among beneficiary children. Coverage was higher in Noubarea than in Matrouh (100.0% and 90.0% respectively).

Table 10. Distribution of vaccination coverage in beneficiary children by recommended vaccination

Vaccination Coverage	Children of Beneficiaries Living in Noubarea		Children of Beneficiaries Living in Matrouh	
	No.	%	No.	%
Yes	25	100.0	27	90.0
No	0	0.0	3	10.0
Irregular	0	0.0	0	0.0
Total	25	100.0	30	100.0

Table 10a. Statistical significance of differences between Noubarea and Matrouh regarding vaccination coverage of children

	χ^2	df	P value	Significance
Vaccination Coverage	2.644	1	0.104	NS

The difference was not statistically significant.

As shown in Table 11, a far greater percentage of children in Noubarea received either one or two doses of vitamin A supplementation (92% compared to 13.3% in Matrouh).

Table 11. Distribution of vitamin A supplementation among beneficiary children

Vitamin A Supplementation	Children of Beneficiaries Living in Noubarea		Children of Beneficiaries Living in Matrouh	
	No.	%	No.	%
Yes				
one dose	10	40.0	3	10.0
two doses	13	52.0	1	3.3
No	2	8.0	26	86.7
Total	25	100.0	30	100.0

Table 11a. Statistical significance of differences between Noubarea and Matrouh regarding vitamin A supplementation for children

	χ^2	df	P value	Significance
Vitamin A supplementation	34.457	2	0.000	HS

The difference between Noubarea and Matrouh was statistically highly significant.

2.4. The Prevalence of Morbidity Diseases Among Children

Table 12 shows the prevalence of morbidity diseases (during the month prior to the survey) among children. The morbidity rates were very high in both Noubarea and Matrouh. Around 60 percent of children in Noubarea and around 40 percent of children in Matrouh had diarrheal or vomiting diseases and fever.

Table 12. Distribution of morbidity in beneficiary children in the month prior to the survey

Variable	Children of Beneficiaries Living in Noubarea									Children of Beneficiaries Living in Matrouh								
	Morbidity in month prior		No. of episodes		Duration (days)		No Morbidity in month prior		Total	Morbidity in month prior		No. of episodes		Duration (days)		No Morbidity in month prior		Total
	No.	%	1-2	3-5	1-5	6-≥10	No.	%		No.	%	1-2	3-5	1-5	6-≥10	No.	%	
Diarrhea and/or Vomiting	15	60.0	11	4	15	0	10	40.0	25	13	43.3	13	0	6	7	17	56.7	30
URTI*	13	52.0	12	1	12	1	12	48.0	25	3	10.0	3	0	2	1	27	90.0	30
LRTI**	0	0.0	0	0	0	0	25	100.0	25	0	0.0	0	0	0	0	30	100.0	30
Fever Attacks	15	60.0	14	1	13	2	10	40.0	25	13	43.3	13	0	6	7	17	56.7	30
Skin Rash (measles)	1	4.0	1	0	0	1	24	96.0	25	0	0.0	0	0	0	0	30	100.0	30

* URTI = Upper respiratory tract infections.

** LRTI = Lower respiratory tract infections.

Table 12a. Statistical significance of differences between Noubarea and Matrouh regarding distribution of morbidity in beneficiary children in the month prior to the survey

	χ^2	df	P value	Significance
Diarrhea and/or vomiting	1.516	1	0.218	NS
URTI	11.661	1	0.001	S
Fever attacks	1.516	1	0.218	NS
Skin Rash	1.222	1	0.269	NS

Annex

Nutritional Survey Questionnaire

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Nutritional Status of the Household Head

Serial No. Date

Team code:

Governorate:..... District:..... Village:.....

Name of HH head:/ Age year

Physiological Status:

Weight Kg height cm

Nutritional Status of the Mother

Name of mother:/ Age year

Physiological Status:

1- Pregnant 2- Lactating 3- Non pregnant non lactating

Weight Kg height cm

Hb

Nutritional Assessment of Children Under 5 Years

Serial No. Date

Team code: Investigator code Reviewer code

Name of child / type: 1- male 2- female

- Date of birth

Weight Kg height cm

Hb test

- Did the child have the routine vaccinations?

Yes No not regular

- Did the child receive vitamin A supplementary doses?

Once twice No

- Is the child breastfed now? Yes No

- How long did the child breastfeed? months

- During breastfeeding, at what point did the child start having food other than breast milk? months

Assessment of Health Status of the Household Head

Team code:

Serial No:

Date:

Head of HH:

Do you have any of the following non-communicable diseases:

Diabetes: **Yes** **No** **Don't Know**

Hypertension: **Yes** **No** **Don't Know**

Heart Diseases: **Yes** **No** **Don't Know**

Micronutrient deficiency signs for HH head

Eye manifestations of vitamin A deficiency

* Night blindness

* Bitot spots

* No signs of Vitamin A deficiency

Goiter detection

Grade of goiter size

Assessment of Health Status of Mothers

Team code:

Serial No:

Date:

Name of the mother:

Do you have any of the following non-communicable diseases:

Diabetes:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Don't Know	<input type="checkbox"/>
Hypertension:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Don't Know	<input type="checkbox"/>
Heart Diseases:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Don't Know	<input type="checkbox"/>

Micronutrient deficiency signs for mother:

Eye manifestations of vitamin A deficiency

* Night blindness

* Bitot spots

* No signs of Vitamin A deficiency

Goiter detection

Grade of goiter size

Clinical Examination of Children (under 5 years):

Name of the child Birth Date

Eye manifestations of vitamin A deficiency

Night blindness

Bitot spots

No signs of Vitamin A def.

Goiter detection

Grade of goiter size

Morbidity (during the last month)

* **Diarrhea, vomiting or both**

Number of episodes Duration of episode days

* **Upper respiratory disease**

Number of episodes Duration of episode days

* **Lower respiratory disease**

Number of episodes Duration of episode days

* **Fever attacks**

Number of episodes Duration of episode days

* **Skin Rash (measles)**

Number of episodes Duration of episode days