

# **“What have we got here?”**

A survey of the incidence of malnutrition and diseases  
presented in the Outpatient Department of  
Child In Need Institute, Kolkata, India

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## **Abstract**

Introduction: In this survey the main objective is to create a clear and reliable picture of the incidence of malnutrition and diseases and their correlation in the Outpatient Department (OPD) and Thursday Clinic (TC) of Child In Need Institute (CINI), a leading Non Governmental Organization, focusing on the healthcare for mother and child in Kolkata, India.

Materials and methods: All patients  $\leq 5$  years old attending the OPD and TC in a 3 week period are included in the survey. Presented diseases and grade of malnutrition are assessed. In the TC age and gender are also scored.

Results: In the TC 31.3% of all patients is malnourished, 25.1% of the male, 38.2% of the female patients. In the OPD 35.7% of the patients is malnourished.

Respiratory tract infections are the most presented diseases in this survey period (74.5% in the OPD, 29.2% in the TC).

Discussion/recommendations: The most important conclusion of this survey is the clear fact that there is a higher rate of malnutrition among girls then there is among boys.

Awareness should be raised about this, in order to decrease this rate.

Due to the different approach in the OPD and TC, the short survey period and the unreliability of parts of the data, no reliable comparison between OPD and TC can be made, and no reliable correlation between malnutrition and diseases can be seen. More extended and complete surveys are recommended.

## **Introduction**

Child In Need Institute (CINI) is a leading Non Governmental Organization focusing on the healthcare for mother and child. CINI is doing this through a number of institution based services like the daily Outpatient Department (OPD), the weekly Thursday Clinic (TC), the Nutrition Rehabilitation Clinic (NRC), where mothers learn to feed their malnourished child in a proper way, even with limited resources, and the Emergency Ward (EW), where relatively simple conditions can be treated with for example intravenous medication and nebulization.

All these services are provided for just a small amount of money and therefore even accessible for the poorest in the population. In these institution based services healthcare is provided for children up to the age of 5 years because of the vulnerability in development in these years, the importance of a proper monitoring of especially malnutrition in this phase of life and the impossibility to reach out to a bigger population due to a lack of resources. The clinics mentioned above are based on a campus in a suburb of Kolkata and reach out to the poor inhabitants of the surrounding villages. Due to the holistic and preventive approach used by CINI the healthcare provided is more alike to General Practitioners Medicine for young children than it is to Pediatrics. This is an approach CINI applies intentionally to be an additive, and not a competitor, to the existing healthcare system in India.

The main difference between the OPD and TC is that in the TC patients are screened by healthworkers and triaged on the need of being referred to a doctor. Furthermore in the TC nutrition counseling and an immunization programme takes place.

The main objective of this survey is to create a clear and reliable picture of the incidence of malnutrition and diseases presented in the OPD and TC of CINI. To know how the approach towards medicine could be improved and to be able to assess in the future whether changes have made a difference, it is important to have a baseline from which CINI can work.

In this survey the incidence of both malnutrition, as well as diseases is assessed. Furthermore an analysis is made on the correlation between malnutrition and disease, the differences between OPD and TC and differences based on gender and age.

## **Materials and methods**

### Population/exclusion criteria

All patients attending the OPD in the period of 09-02-2009 to 27-02-2009 or the TC in the period of 05-02-2009 to 26-02-2009 are included in the survey. Patients admitted to the EW or NRC are excluded. Patients with an age > 5 years are excluded.

### Selection of data

Presented diseases, grade of malnutrition and need for admission to EW or NRC is assessed in the OPD and the TC. A subdivision is made for the age groups 0-1 year, 1-2 years and 2-6 years. In the TC gender is also assessed.

### Collection of data

In the OPD diagnose, grade of malnutrition and need for admission is documented on a scoring list (Appendix 1) by doctors and medical students. The scoring list is created to include all the expected to be most presented diseases in the OPD and TC. This is done in cooperation with the doctors working in the OPD. The number of patients is scored at the registration desk in the OPD.

In the TC age, gender, grade of malnutrition and (reason for) referral to a doctor are documented on registration sheets by health workers.

### Statistical analysis

A basic analysis is made of the data collected.

## Results

### Thursday clinic

The number of patients screened by health workers in the TC is 1128, 609 (54%) of these patients are male. A total of 351 patients (31.1%), 153 of the male patients (25.1%) and 198 of the female patients (38.2%) is malnourished. (Figure 1)

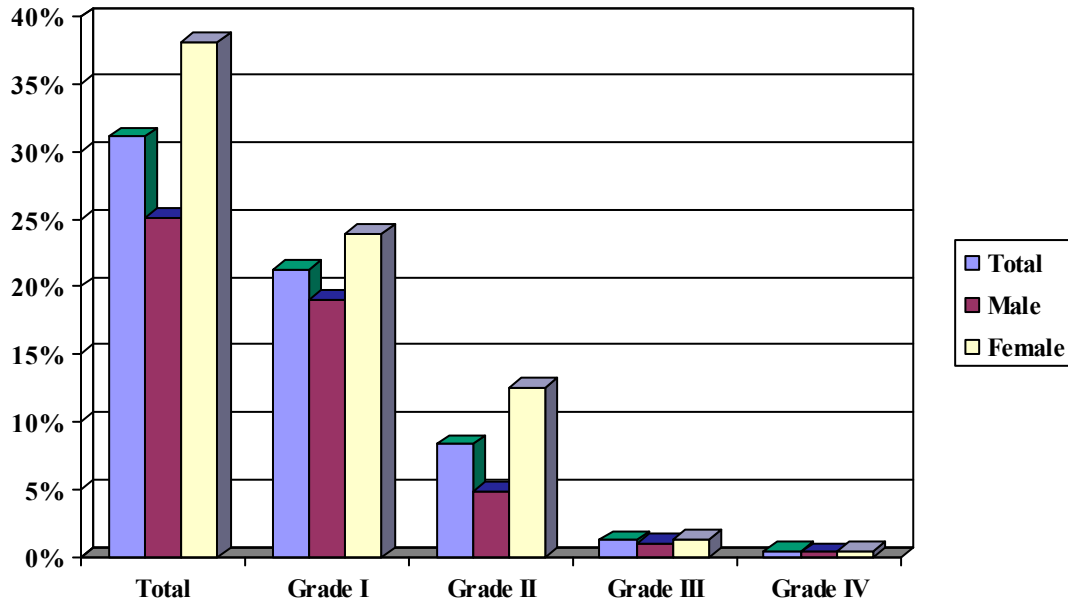


Figure 1: malnutrition Thursday clinic

Of the total population 221 patients (19.6%) are referred with a respiratory tract infection and 107 (9.5%) are referred with cough and cold.

More female (8.9%) than male (6.2%) patients are presenting with diarrhea. More male than female patients are presenting with skin infection (male 7.1%, female 2.9%) and cough and cold (male 10.5%, female 8.3%). (Table 1 and figure 2)

	Total	Male	Female
<b>Diarrhea</b>	84 (7.4%)	38 (6.2%)	46 (8.9%)
<b>Skin infection</b>	58 (5.1%)	43 (7.1%)	15 (2.9%)
<b>Cough &amp; cold</b>	107 (9.5%)	64 (10.5%)	43 (8.3%)

Table 1: results Thursday clinic

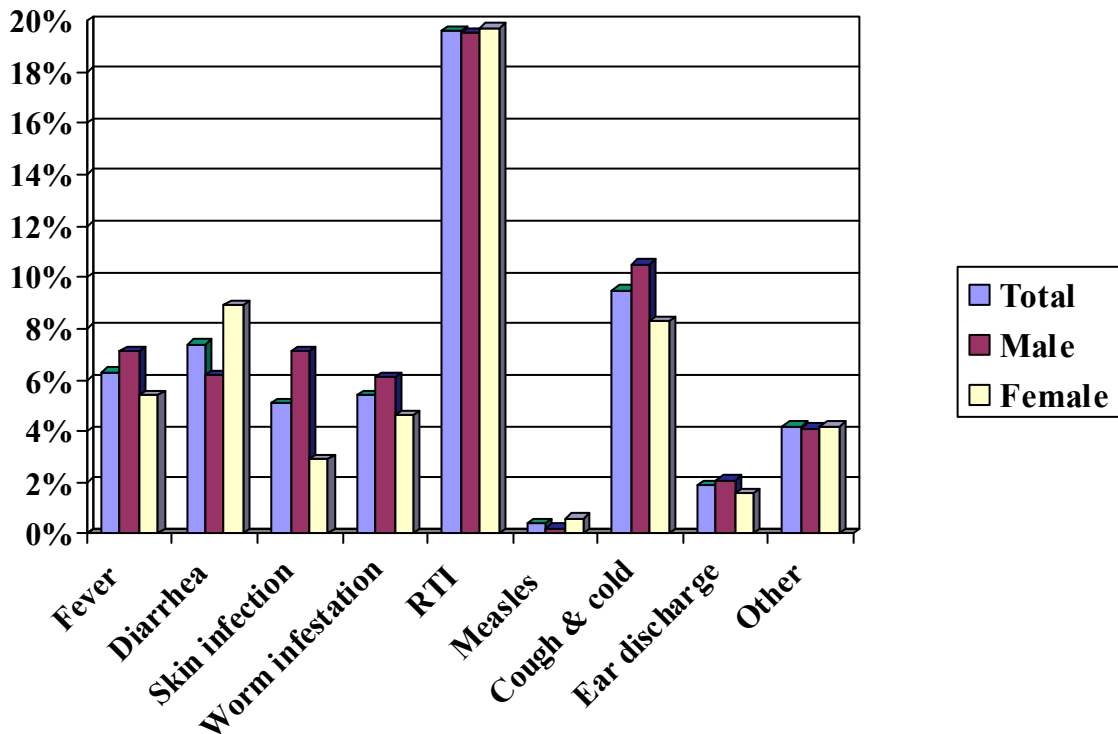


Figure 2: diseases Thursday clinic

There is a correlation between malnutrition and increased incidence of referral for diarrhea (malnutrition 8.6%, no malnutrition 6.9%), worm infestation (malnutrition 6.3%, no malnutrition 4.9%) and the category of other diseases (malnutrition 6.6%, no malnutrition 3.1%). There is a correlation between malnutrition and a decreased incidence of referral for skin infection (malnutrition 3.1%, no malnutrition 5.8%) and respiratory tract infection (malnutrition 18.6%, no malnutrition 19.8%). (Table 2 and figure 3)

	Total	Malnutrition	No malnutrition
<b>Diarrhea</b>	84 (7.4%)	31 (8.6%)	53 (6.9%)
<b>Skin infection</b>	58 (5.1%)	11 (3.1%)	47 (5.8%)
<b>Worm infestation</b>	60 (5.3%)	22 (6.3%)	38 (4.9%)
<b>RTI</b>	221 (19.6%)	65 (18.6%)	156 (19.8%)
<b>Other</b>	47 (4.2%)	23 (6.6%)	24 (3.1%)
<b>No referral</b>	371 (32.9%)	137 (39.1%)	234 (30.3%)

Table 2: results Thursday clinic

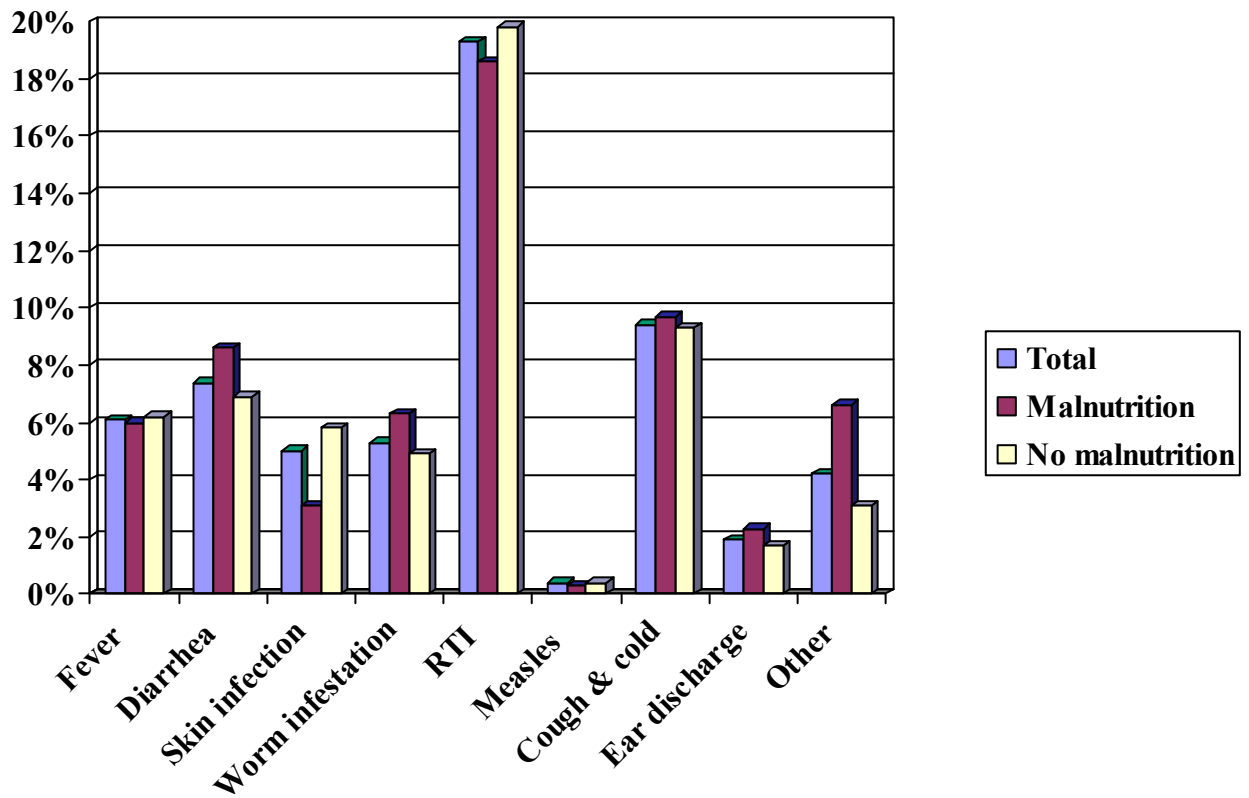


Figure 3: malnutrition and diseases Thursday clinic

No major differences based on age are found in the TC.

### Outpatient Department

The number of patients attending the OPD is 655, based on the data from the registration desk. Because not all the patients are scored for malnutrition and diagnose a bias in analysis occurs. A total of 416 patients are scored for malnutrition. For the analysis of date the mean of these two totals is taken. This comes to a total of 535.5 patients. A total of 191 patients (35.7%) are malnourished. (Table 3 and figure 4)

	Reg. (655)	Scored (416)	Mean (535.5)
<b>Total (191)</b>	29.2%	45.9%	<u>35.7%</u>
<b>Grade I (132)</b>	20.2%	31.7%	<u>24.6%</u>
<b>Grade II (47)</b>	7.2%	11.3%	<u>8.8%</u>
<b>Grade III (10)</b>	1.5%	2.4%	<u>1.9%</u>
<b>Grade IV (2)</b>	0.3%	0.5%	<u>0.4%</u>

Table 3: results Outpatient Department

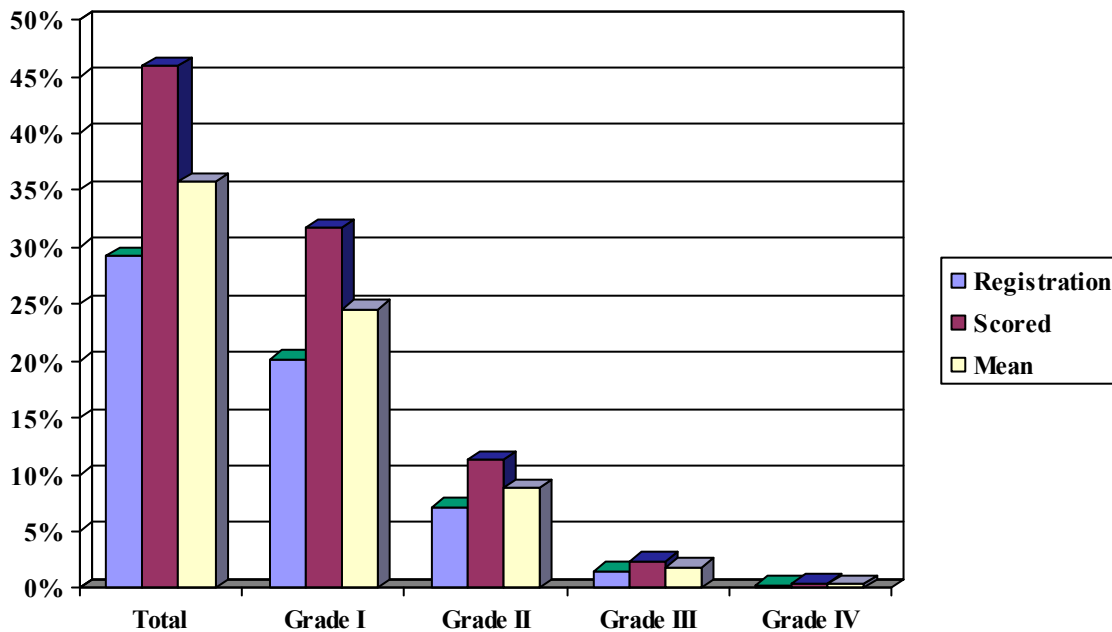


Figure 4: malnutrition Outpatient Department

The diseases with the highest incidence are upper respiratory tract infection (46.3%), lower respiratory tract infection (12.3%), acute gastro-enteritis/diarrhea (10.6%) and chest congestion (9.9%). (Table 4 and figure 5)

		Reg. (655)	Scored (416)	Mean (535.5)
Upper RTI	(248)	37.9%	59.6%	46.3%
Lower RTI	(66)	10.1%	15.9%	12.3%
Chest congestion	(53)	8.1%	12.7%	9.9%
Astma/COPD	(22)	3.4%	5.3%	4.1%
Tuberculosis	(10)	1.5%	2.4%	1.9%
AGE/diarrhea	(57)	8.7%	13.7%	10.6%
Abdominal colic	(10)	1.5%	2.4%	1.9%
Amebiasis/worm infestation	(20)	3.1%	4.8%	3.7%
Parasitic skin infection	(17)	2.6%	4.1%	3.2%
Bacterial skin infection	(10)	1.5%	2.4%	1.9%
Feeding problem	(9)	1.4%	2.2%	1.7%
Other	(61)	9.3%	14.7%	11.4%

Table 4: results Outpatient Department

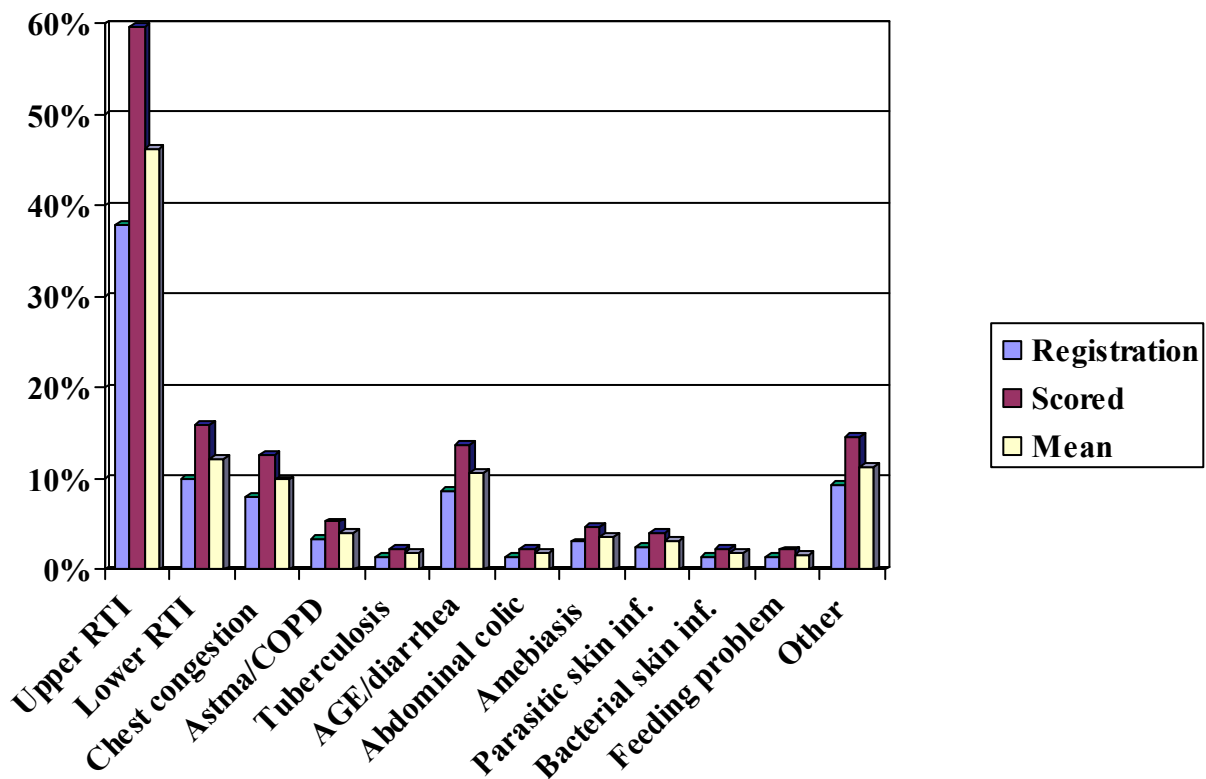


Figure 5: diseases Outpatient Department

Because the total number of patients scored by the registration desk is not specified for age an analysis based on age is not possible.

### Outpatient Department and Thursday clinic compared

The incidence of malnutrition in the OPD is higher than in the TC in total (OPD 35.7%, TC 31.1%) and for all the grades of malnutrition. (Table 5)

	<b>OPD</b>	<b>(535.5)</b>	<b>Thursday clinic</b>	<b>(1128)</b>
<b>Total</b>	191	<u>(35.7%)</u>	351	<u>(31.1%)</u>
<b>Grade I</b>	132	<u>(24.6%)</u>	240	<u>(21.3%)</u>
<b>Grade II</b>	47	<u>(8.8%)</u>	94	<u>(8.3%)</u>
<b>Grade III</b>	10	<u>(1.9%)</u>	13	<u>(1.2%)</u>
<b>Grade IV</b>	2	<u>(0.4%)</u>	4	<u>(0.4%)</u>

*Table 5: malnutrition in Outpatient Department and Thursday Clinic compared*

To be able to compare the incidence of diseases in OPD and TC cough and cold, upper and lower respiratory tract infection, chest congestion, asthma/COPD and tuberculosis are all joined under respiratory tract infection. Amebiasis and worm infestation are joined under amebiasis/worm infestation and all skin infections, measles and eczema are joined under skin condition.

The incidence of respiratory tract infection is a lot higher in the OPD (74.5%) than in the TC (29.1%). The incidence of acute gastro-enteritis/diarrhea (OPD 10.6%, TC 7.4%) and skin condition (OPD 7.3%, TC 5.5%) are higher in the OPD. The incidence of amebiasis is higher in the TC (5.4%) than in the OPD (3.7%). (Table 6)

	<b>OPD</b>	<b>(535.5)</b>	<b>Thursday clinic</b>	<b>(1128)</b>
<b>RTI</b>	399	<u>(74.5%)</u>	328	<u>(29.1%)</u>
<b>AGE/diarrhea</b>	57	<u>(10.6%)</u>	84	<u>(7.4%)</u>
<b>Amebiasis/worm infestation</b>	20	<u>(3.7%)</u>	61	<u>(5.4%)</u>
<b>Skin condition</b>	39	<u>(7.3%)</u>	62	<u>(5.5%)</u>

*Table 6: diseases in Outpatient Department and Thursday Clinic compared*

## **Discussion**

### Results

The most important result of this survey is the clear fact that there is a higher rate of malnutrition among girls than there is among boys. The cause for this fact remains unclear, but it could be that girls are more neglected and worse taken care of than boys are.

The incidence of malnutrition of 31.1-35.7% is lower than expected within this population. This could be a result of the preventive work and holistic approach CINI is practicing.

The higher incidence of malnutrition in the OPD is what was expected, as is the higher incidence of acute gastro-enteritis/diarrhea and skin condition in the OPD, seen the different set up of the both the OPD and the TC. More ill patients are expected to attend the OPD.

The much higher incidence of respiratory tract infection in the OPD is surprising and could be due to no referral and handling themselves by health workers. It is also possible that double scoring by doctors in the OPD occurred, for example both chest congestion and upper respiratory tract infection.

The cause of the higher incidence of amebiasis/worm infestation in the TC is unclear. The higher incidence of skin infection and cough and cold in boys in the TC and the higher incidence of diarrhea in girls in the TC is not easily explained either. The cause of a higher incidence of skin infection and respiratory tract infection in the absence of malnutrition is unclear.

The overall high incidence of respiratory tract infection can be explained by seasonal influences, the survey being done in February.

### Survey

Critical notes should be made to this survey.

The number of patients in the TC is not reliable, because there are patients consulting a doctor without being screened or referred by a health worker.

Incidence of diseases is not reliable due to no complete scoring in the OPD and no complete documentation of referral in the TC.

No reliable comparison is possible between OPD and TC, because of differences in diagnosing between doctors and health workers and different categories of disease in OPD and TC.

Malnutrition is not being scored reliably because it is not scored completely in the OPD and different kinds of grow charts are used. In the older grow charts it is not properly possible to score malnutrition in the 5 category system which is used in the new grow chart. See figure 8 for the new curves to be implemented in the old grow chart.

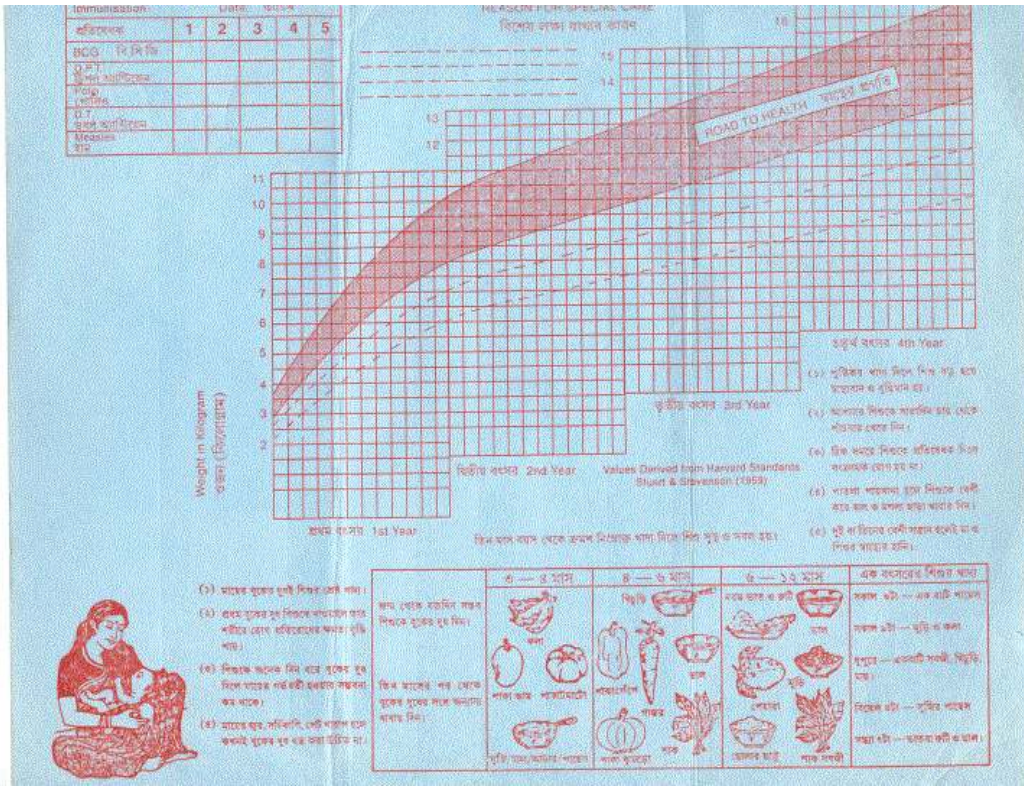


Figure 6: the old grow chart

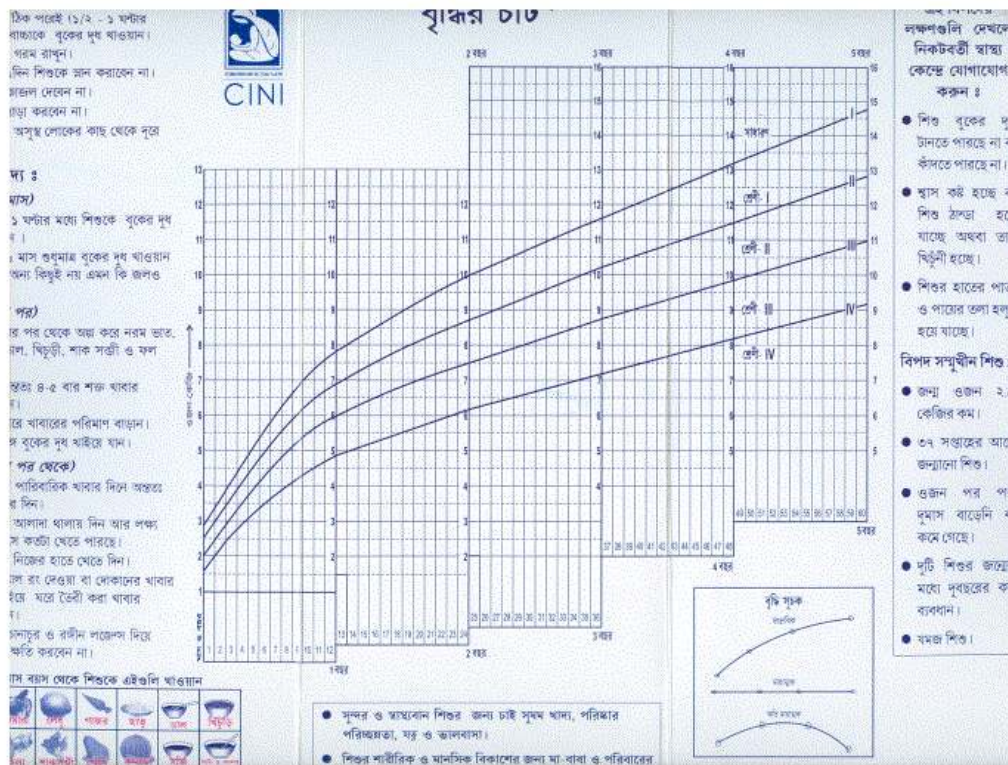


Figure 6: the old grow chart



## **Recommendations**

In general it is important to raise awareness about the higher incidence of malnutrition in girls in order to try to decrease this level. Furthermore it is recommended to use the new grow charts only, or at least be aware of the errors in the older grow charts.

In the light of further surveys and studies in this particular field it is recommended to extend this survey to longer periods of time and to other seasons as well. Furthermore it is recommended to always score the grade of malnutrition, even if there is none, and outsource the scoring of malnutrition to the registration desk, to get the data as complete as possible. In the TC the patients should always be screened by a health worker and not be assessed by a doctor if not referred. The health worker has to make sure referral is completely documented. Last of all the same categories of disease should be used in both OPD and TC to make a reliable comparison of OPD and TC possible.

## **Appendices**

Appendix 1: scoring list Outpatient Department