

**Follow up Assessment of Children Born from Iodine Supplemented  
Mothers during Pregnancy in Sindhupalchok District**

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We would like to thank to children, mothers and involved community people in our study for providing data and information.

## **Summary**

This follow up study was conducted to assess the anthropometric and general clinical status of children born from mothers supplemented with COMB (iodine supplemented) during pregnancy. A total of 32 children among 60 were clinically assessed to observe the growth and development, developmental milestones, and anthropometric parameters. Most of the children had normal growth, normal in clinical assessment and nutritional status. Therefore, it can be suggested that iodine supplementation during pregnancy could be an effective strategy for the normal growth and development of the children.

## Introduction

Iodized salt and oil are considered as the most appropriate measure for iodine supplementation. The daily requirement of iodine is 150 µg per person for adults. It is considered that iodine deficiency has been eliminated from one particular country when the access to iodized salt at household level is at least 90%, together with a median urinary iodine of at least 100 µg/l and with less than 20% of the samples below 50 µg/l. USI is the long-term strategy for the control of IDD in Nepal. Study reflected that 17% of salt samples were found to contain no iodine at all, while approximately 55% of the salt samples contained at least 15ppm iodine and other study also revealed that most of the populations are using powder salt but was iodine deficient. Nepal Demographic Health Survey (NDHS, 2006) revealed that for age-group 12-23 months, malnourished (<- 2SD) *by height for age - 47.5%, by weight for height- 18.0%, weight for age- 39.0%* (number of children surveyed 981).

The first phase study where the iodine supplementation was done to mothers during pregnancy revealed that there is significant difference of newborn baby from mothers supplemented with iodine in weight, length, and result of thyroid function test. Therefore, this follow up study was conducted to assess the anthropometric and general clinical status of children born from mothers supplemented with COMB (iodine supplemented) during pregnancy after one year.

### Objectives:

1. To describe the characteristics of children born from iodine supplemented mothers during pregnancy
2. To assess the physical and clinical characteristics of the children
3. To assess nutritional status of the children through anthropometric measurements

## **Materials and Methods**

### **Research design**

This was a follow up study to assess the effects of iodine supplementation in children born from mothers supplemented with iodine during pregnancy.

### **Study site and population**

The site of this study was Sindhupalchok district. The first phase study conducted in Chautara Hospital included 60 pregnant women of first and second trimester and those who were registered in Chautara Hospital and district ANC centre in 2007. We conducted follow up study after one year among children born from the same group of mothers. We selected five adjacent VDCs of Chautara VDC to include children born from mother supplemented with iodine during pregnancy in the study.

### **Sample size**

Among 60 children born from mothers supplemented with iodine, 32 children were included in the study.

### **Training of clinicians and field workers**

Medical doctors were trained regarding the study objectives, methodology, so as to have better outcome of the information. One day training to familiarize tools, method of anthropometric measurement, clinical assessment tools was performed in the Institute of Medicine, Tribhuvan University, Kathmandu to assure validity and reliability of the study. Field workers were selected among female community health volunteers (FCHVs) from concerned VDCs. They were trained for community facilitation and implementation of data collection tools.

### **Data collection**

Data and information related to clinical conditions of the children were collected by the involved medical doctors. Other demographic, antenatal, natal and post natal history were collected by FCHVs.

### **Data management and analysis**

Data entry and analysis was done in SPSS version 11.5. Descriptive analysis was done in mean, SD, 95% CI and percentages.

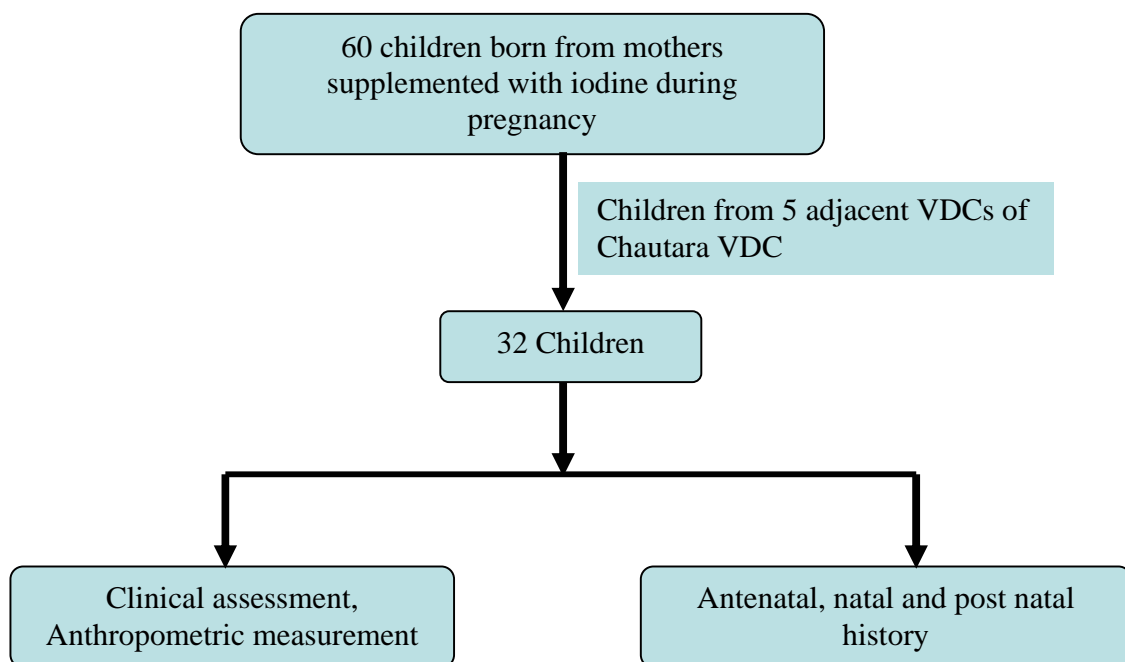


Figure 1: Study design

## Results

### A. Descriptive characteristics of the children

We followed 32 children born from mothers supplemented with iodine during pregnancy. Among them, 15 (46.9%) were 12-18 months old whereas 17 (53.1%) were 19-24 months old. Those children were born from mothers supplemented with iodine for 1-4 months (65.6%), 5-8 months (31.3%), and more than 8 months (3.1%). Most of the mothers were supplemented with more than 120 iodine capsules during pregnancy.

Table 1: Descriptive characteristics of the children

Characteristics	Number (n = 32)	Percent
<i>Age of the children (in months)</i>		
12-18	15	46.9
19-24	17	53.1
<i>Sex</i>		
Male	13	40.6
Female	19	59.4
<i>Order of the child</i>		
First	22	68.8
Second	9	28.1
Fourth	1	3.1
<i>Duration of iodine supplementation (in months)</i>		
1- 4	21	65.6
5-8	10	31.3
More than 8	1	3.1
<i>Dose of the supplementation (capsules)</i>		
30	2	6.3
60	2	6.3
90	3	9.4
120	16	50.0



150	8	25.0
180	1	3.1

## B. Physical and clinical assessment of the children

Regarding physical and clinical characteristics of the children, growth was assessed clinically. Eighty seven percent children had normal growth as compared to other children of same age with normal growth. Majority of children started erection of head within 3 months of age. More than 90% children started sitting without support within seven months. Few children (2, 6.3%) had history of hair fall.

Table 2: Physical and clinical characteristics of the children

<b>Variables</b>	<b>Number</b>	<b>Percent</b>
<i>Growth of child as compared to other children of same age</i>		
Normal	28	87.5
Forward	1	3.1
Delayed	3	9.4
<i>Months of starting erection of head</i>		
Within 3 months	17	53.1
4-6 months	10	31.3
More than 6 months	5	15.6
<i>Months of starting sitting with support</i>		
7	30	93.8
8	1	3.1
9	1	3.1
<i>Months of starting sitting without support</i>		
7	1	3.1
9	31	96.9
<i>History of hair fall</i>		
Yes	2	6.3

No	30	93.7
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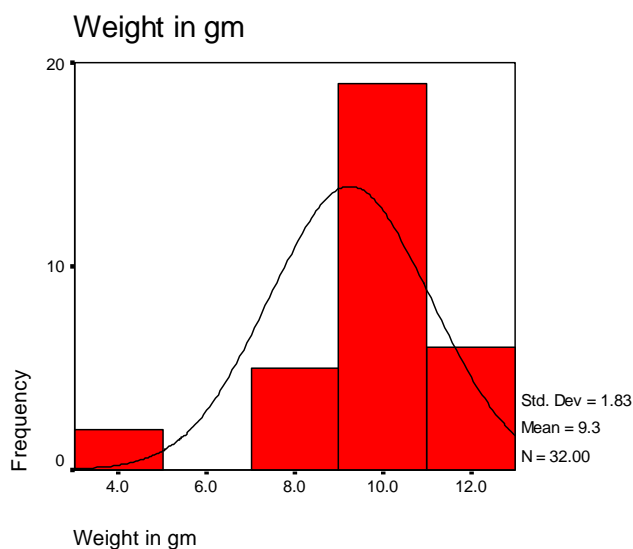
### C. Nutritional status of the children by anthropometric measurements

The mean ( $\pm$ SD) of age, height, weight, head circumference and chest circumference were 18.34 months (2.13), 73.94 cm (6.50), 9.25 kg (1.83), 45.66 cm (2.69) and 47.09 cm (4.76) respectively.

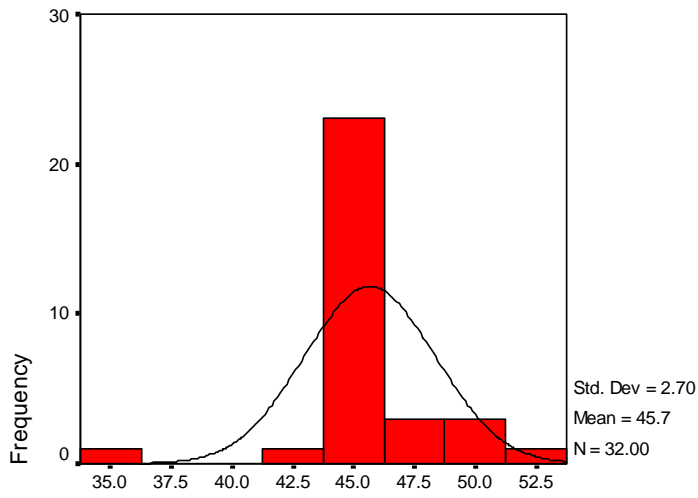
Table 3: Nutritional status measurements of children

Variables	Mean	SD
Age (months)	18.34	2.13
Height (cm)	73.94	6.50
Weight (kg)	9.25	1.83
Head circumference (cm)	45.66	2.69
Chest circumference (cm)	47.09	4.76

### Normal distribution curve of anthropometric measurements of children

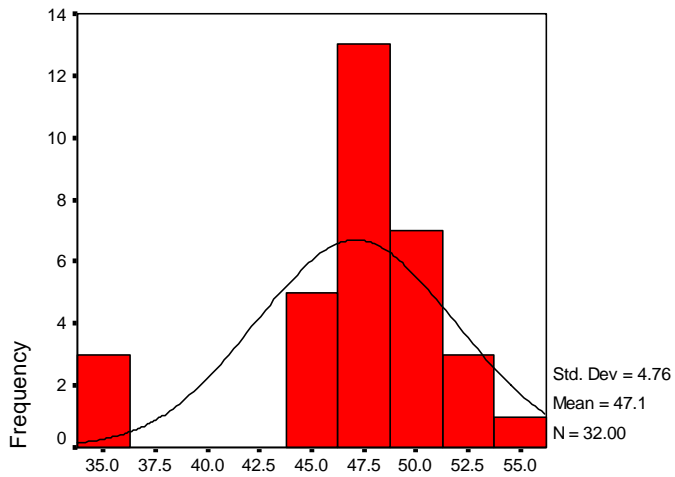


Head circumference in cm

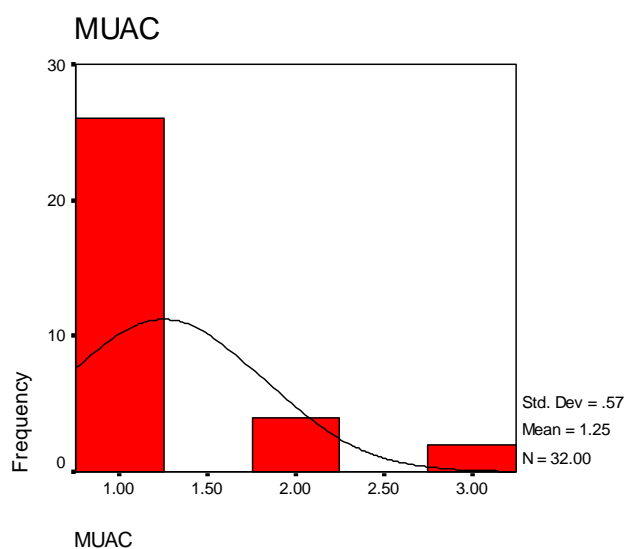


Head circumference in cm

Chest circumference in cm



Chest circumference in cm



In case of nutritional status of children, 81.3, 75.0, 71.9, 93.7, 90.6% of the children had normal mid-upper arm circumference (MUAC), nutritional status by weight for age, height for age, weight for height, and chest head ratio respectively. In reference to Nepal Demographic Health Survey, 2006, the proportion of malnourished children born from mothers supplemented with iodine during pregnancy was considerably low (Table 4).

Table 4: Anthropometric measurements of the children

<b>Variables</b>	<b>Number</b>	<b>Percent</b>	<b>Percentage of malnourished children (NDHS, 2006)</b>
<i>Mid-upper arm circumference (MUAC)</i>			
Normal (green)	26	81.3	
Moderate (yellow)	4	12.5	
Low (red)	2	6.3	
<i>Nutritional status by weight for age</i>			
Malnourished	8	25.0	39.0
Normal	24	75.0	
<i>Nutritional status by height for age</i>			

Malnourished	9	28.1	47.5
Normal	23	71.9	
<i>Nutritional status by weight for height</i>			
Malnourished	2	6.3	18.0
Normal	30	93.7	
<i>Chest head ratio</i>			
Malnourished	3	9.4	
Normal	29	90.6	

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**Comment/ suggestions for further improvement /feedback from the mother regarding this study/program**

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