THE TRANSITIONAL GOVERNMENT OF ETHIOPIA
CENTRAL STATISTICAL AUTHORITY

ANALYTICAL REPORT ON CHILD NUTRITIONAL STATUS THROUGH ANTHROPOMETRIC MEASUREMENTS RURAL NUTRITION SURVEY, 1983 SECOND ROUND

ADDIS ABABA, JULY, 1992

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1- Introduction

Government agricultural and rural development programs and policy changes have been going on for some time in Ethiopia. These include nationalization of land, resettlement and villagization, literacy eradication campaign,...etc. Although nutritional improvement was not a stated objective, some of these programs could be expected to have positive effect while some may have unintended negative effect on nutrition of the population. Thus the need for national data that would provide the national picture and that would be used as a bench mark to evaluate such ongoing changes has been obvious for some time.

As a government agency entrusted with collection and dissemination of data on different disciplines the Central Statistical Authority (CSA) had undertaken three rounds of Nutrition Survey in 1982-83 as part of its Rural Integrated Household Survey Program of which the second and the third rounds included anthropometric measurements of infants and young children. A report on these surveys has been produced and indeed it has been possible to give the general picture of the nutritional status including some information on types of food items and feeding habits of the rural sedentary population covered by the survey (i.e., twelve out of a total of fourteen regions, excluding the regions of Eritrea and Tigray).

Nevertheless, noting the importance of knowing in relatively more detail, the extent of malnutrition or undernutrition (magnitude), who and where the malnourished are (distribution), and why people are malnourished (causal factors) has necessitated the need of analyzing the results of the second and third rounds in more detail, as the survey returns on anthropometric measurements were not treated adequately in the previous report. Specifically more uptodate methods are used in the present report. Thus, this report presents the outcome of relatively more detailed analysis of only the second round survey returns which was carried out during the end of January to beginning of February 1983. This is a period

of post-harvest in the country where availability of food is assumed to be high. Due to technical reasons, we were not able to include analysis of findings of the third round, carried out in the period of pre-harvest, namely during early July 1983.

Information on the methodology of the survey, including scope of the survey, development of questionnaire and interviewers' instruction manual, training, field organization and survey operation have been presented in the report of the three rounds produced earlier, and were considered redundant to repeat them here. A reader interested in these can refer to the earlier report entitled "REPORT ON THE RURAL NUTRITION SURVEY" prepared and issued by the CSA in July 1989, Addis Ababa.

In this report the result of the survey returns on anthropometric measurements (excluding that of Upper Arm Circumference) are presented and an attempt has also been made to present the results in a way which is directly relevant to researchers and policy makers. The first three sections present introduction, specific objectives and methodology of the report, followed by section four which deals with background on basic concepts in childhood nutrition and major findings of the survey. Section five presents significant differentials in childhood nutritional status as observed in the course of the analysis. At the end, summary of major findings and general conclusions are presented.

2- Objectives of the report

The major objectives of the paper are to indicate the level and geographic distribution of nutritional status of children by different variables as assessed by anthropometric measurements. Further, using the limited information, attempt has been made to investigate differentials in nutritional status. Specifically the report has the following objectives:-

i) Analyze existing infromation on level, pattern and differentials of nutritional status, with a few specific indicators of nutiritonal status.

ii) Produce nutrition maps which would promote the prompt use of this infromation for national programming and advocacy.

iii) To provide information that would serve as a bench mark for future studies.

3- Methodology of the Report

The paper will start by discussing the concept of growth norms. Statistical measures of growth including, medians, percent median, decile and Standard Devaitions Scores (SD-Scores) will be considered. The second step will primarily pay attention to summarize levels of nutritional status by applying Waterlow classification and analyzing nutritional status differentials among the population under consideration, classified by available relevant infromation such as geographic and religious categories and feeding practices of the population. In other words the analysis at this level use Waterlow classification to identify differentials, and a one-way analysis of variance to gauge the significance of differences in the nutritional status. Finally, some generalized recommendations and conclusions are drawn.

The statistical analysis in this study was done by SPSS/PC+ version 4.0 (SPSS inc. 1990). The conversion and comparison of height and weight measurements into the various nutritional status indicators are made using the international reference developed by the United State National Center for Health Statistics (NCHS). NCHS reference was chosen, because as already noted in previously published studies any racail or ethnic effect on mean pre school growth compaired with environmental effect is negligible. For instance, a decade a go it was conformed that East African children who were raised in a good environment, provided with adequate diets

and who received good health care appeared to grow very similar to North American children (L.S. Stephenson, et, al, 12: 1983).

As Stated earlier,The study is based on the second round Rural Nutrition Survey's Anthropometric component carried out in 1983, and other relevant information deemed explanatory for nutritional status such as feeding practices are also taken from this same survey.

4- Nutritional Status of Children

4.1 Background

The nutritional status of children is also a proxy indicator of the nutritional status of the community. In fact, children are most vulnerable to the effect of food shortages, contagious diseases, and other environmental hazards. Thus their situation provide an indirect reflection of the overall well-being of the community as a whole. Further, Young children, because of their fast rate of growth and lack of ability to fend for themselves, are particularly vulnerable to the deprivation that may also affect older members of the same community to a lesser degree. Consequently, under nourished children will manifest reduction in activities, growth retardation, increased susceptibility to infection and biochemical and metabolic changes that can lead to serious future impairments both mentally and physically in the long run while in the short run a child with inadequate food intake will fail to grow properly, and will be lighter, shorter and thinner than he/she should be for his/her age. Thus, the best indicators of nutritional status at a population sub-group level would be measurements of length or height and weight indicating how short and how thin children are.

In general the most important and most prevalent form of malnutrition in communities such as the rural sedentary population

of Ethiopia is that known as protein-energy malnutrition (PEM) for which the cause is basically shortage of food in quantity and quality. Also, there exists a vicious circle between the nutritional status of a child and his/her health, as sick children often loose their appetite at a time when nutrient needs are at their highest and the utilization of food by the body at its lowest. Conversely lack of adequate food leads to bad health.

The assessment of nutritional status has been done using the three most common indicators of nutritional status: height for age, weight for height and weight for age indicators. These different indicators of nutritional status measure different types of malnutrition. Chronic malnutrition is measured by "Height for Age" and presents the cumulative effects of past (long-term) nutritional deprivation and bouts of sickness. A child with severe chronic-malnutrition is termed as "nutritionally stunted". Acute malnutrition is measured by "Weight for Height" and presents a child's recent nutritional complications. A child is termed as "nutritionally wasted" if it has severe acute-malnutrition problems. A mixed picture of past and present nutritional status is provided by using the nutritional indicator of "Weight for Age". Mixed, because of the fact that children can be underweight due to their short stature and hence, lighter body weight because of chronic malnutrition as well as due to their lighter body weight as the result of nutritional wasting due to recent malnutrition. Thus, in order to determine the nutritional status of the rural sedentary communities' children, these three indicators have been used and presented in what follows.

4.2 Level and pattern of Nutritional Status

(a) Weight for Age

Anthropometric data that have been used most frequently in the past for the purpose of identifying a deficit in nutritional status

were weight for age data. In fact, Weight for age data are particularly useful if height measurements are not performed fairly accurately, as mostly happens with children under one year old. The result of the survey on median weight for age with the corresponding reference values are given in Table 1. The results, when plotted in terms of curves against the reference median: median minus one Standard Deviations (-1SD), median-2SD and median -3SD values have produced figures 1 and 2. It appears from these plots and the table that the median weight for age values for both males and females tended to follow the reference's median -2SD values, most of them being slightly over the reference median -2SD (i.e., the majority were between 80 to 85 percent of the reference median) indicating high prevalence of mild malnutrition. Next, an attempt has been made to investigate this in detail.

i- Observed Weight Relative to Reference Median of Weight for Age

According to the distribution of observed weight for age as percent of reference median weight for age indicators criterion, the grading of the observed nutritional status may be classified as follows.

Classification as percent of the Reference Median Weight for Age	Nutritional Status
90% and above	Normal
75 - 89.9%	Mild (first degree) malnutrition
60 - 74.9%	Moderate (second degree) malnutrition
below 60%	Severe (third degree) malnutrition

This criterion for determining the degree of malnutrition is popularly know as Gomez classification (Gomez,et,al,1956; 2:77). Table 2 and figure 3 present the nutritional status of the rural

sedentary population's children in 1983 according to Gomez classification. It appears from this table and figure that only about 28 percent of children were enjoying normal nutritional status, while about 45, 23 and 5 percent of the children were suffering from mild, moderate and severe malnutrition, respectively. Further, malnutrition was found to be slightly higher among boys than among girls. Reported normal nutritional status for girls was about 3.4 percentage points higher than boys, while the proportion of boys moderately malnourished exceeded that of girls by about one percentage point. It is also clear from the table that malnutrition has been rather serious among children in the age-group 12-23 months: 30.8 percent moderately and severely malnourished followed by those aged 24-35 months where 27.3 percent are moderately and severely malnourished while this was lowest in the age-group 6-11 months representing 22.9 percent moderately and severely malnourished followed by those in the age group 36-59 months with 26.5 percent moderately and severely malnourished.

It may be further observed from Table 2 that although the prevalence of malnutrition was generally high, regional variations were discernable. For example, the proportion reported severely malnourished varied from highest 6.9 percent in Gonder to lowest 1.9 percent in Bale. Likewise the proportion reported moderately malnourished varied from a high of 31.1 percent in Gojjam to a low of 13.1 and 13.3 percent in Arsi and Bale, respectively. Table 2 provides further detail.

ii- Decile of Weight for Age

According to this procedure data for an individual child by sex have been used to place the child in the appropriate decile of ten centile brackets of the reference population weight for age distribution in order to give a clear picture of the difference between the nutritional status of the sampled population and the reference population. In the ideal situation and/or by definition if the sampled population children were all well-nourished then

they would be distributed equally (10 percent each) in each decile bracket, i.e., each decile of the reference population contains, by definition, 10 percent of the individuals in the reference population. Thus whenever the majority of the sampled population distribution is clustered within half of the first decile, it shows the extent of unfavorable nutritional situation. The result for all children aged 6-59 months by sex has been presented in Table 3 and Figure 4. It can be seen from this table and figure that the bulk of children were malnourished, as most of them are clustered within the first decile. In fact, nearly half (about 41 percent) of children were classified in the first-third decile (or below the third of the first decile) bracket. The corresponding proportion has been 42 percent for males and 40 percent for females, which means that, malnutrition was slightly higher among boys than among girls. In sum, about 62 percent of boys and 60 percent of girls had weights that placed them in the first decile bracket where only 10 percent of the reference population belonged. This was as high as 77.5 percent in Gonder and as low as 47.2 percent in Bale. These differentials were in conformity to what has been observed in the preceding section.

iii- SD-Score of Weight for Age

The preceding findings are best summarized and analyzed using the Standard Deviation Distribution, also commonly known as SD-Scores and/or called Z-Scores. It measures the relative value of the difference between the anthropometry (recorded weight for a given age, in this case) of children covered by the survey to that of same cohort of well fed children of the reference population. This measure has an advantage over the preceding ones as the resulting indicators are independent of the age-sex composition of the sampled population. The SD-Score of weight for age indicator of nutritional status is given by the following formulae

Weight for Age = Child's Weight-Reference Median Weight;same age&sex
SD-Score SD of reference; same age & sex

It measures the relative nutritional status of a child, as assessed by weight for age anthropometry, to same cohort of well fed children. The computed values of weight for age SD-Scores are summarized in Tables 4 and 5 and Figure 5. These tables and figure show that just over 37 percent of children covered by the survey have SD-Score values less than or equal to -2. Considering those with SD-Score values less than or equal to -2 as underweight, over 37 percent of children in rural Ethiopia were underweight as the result of past and present malnutrition in 1983. By sex, this was just over 38 percent for boys and about 37 percent for girls.

Further more, one can observe the following common patterns of relationship between age and malnutrition (underweight in this case) by sex; (i) the proportion of underweight children (with SD-Scores Less than or equal to -2) was found to be lowest in the group 6-11 months, irrespective of sex, while it was highest in the age-group 11-23 for males and in the age groups 11-23 and 24-35 months for females; (ii) excepting for the age-group 36-59 months, the proportions of boys with SD-Scores below or equal to -2 were higher than that of girls, and (iii) when both sexes taken together the percentage of being under-weight was increasing up to the age-group 12-23 and started to decline thereafter gradually. All this confirm, the findings in the preceding two sections.

It may be further observed from Table 5 that the proportion of children aged 6-59 months with weight for age SD-Scores below or equal -2 has been reported to be highest in Gonder (50.5%), followed by Gojjam (47.2%), Wello (45.3%), Wellega (43.5%), Kefa (40.0%) and Illubabor (39.2%), while this was lowest in Bale (23.0%) followed by Arssi (25.5%), Shewa (33.8%), Hararge (34.3%), Gamo-Goffa (35.6%) and Sidamo (35.8%). Hence, proportion underweight varied from highest (50.5%) in Gonder to lowest (23.0%) in Bale. All these differentials are confirmed by all three methods used and have only been brought up here most prominently.

Table 1 Median Weight for Age of Children Aged 6-59 Months as Compared to the Standard Developed by the United States National Center for Health Statistics by Sex and Age in Single Months, (all Regions Combined)

Age in Months	Boys				Girls			
	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median
6	93	6.8	7.8	87.2	92	6.5	7.2	90.3
7	106	7.1	8.3	85.5	99	6.5	7.7	84.4
8	113	7.4	8.8	84.1	115	6.8	8.2	82.9
9	93	8.0	9.2	87.0	91	7.2	8.6	83.7
10	94	7.9	9.5	83.2	67	7.3	8.9	82.0
11	78	7.7	9.9	77.8	67	7.5	9.2	81.5
6 - 11	577	7.4			531	6.8		
12	140	9.1	10.2	89.2	149	8.7	9.5	91.6
13	56	8.5	10.4	81.7	72	8.0	9.8	81.6
14	80	8.8	10.7	82.2	92	8.9	10.0	89.0
15	86	9.2	10.9	84.4	86	8.9	10.2	87.3
16	71	9.1	11.1	82.0	77	8.8	10.4	84.6
17	111	9.2	11.3	81.4	88	9.1	10.6	85.8
18	122	9.6	11.5	83.5	130	9.3	10.8	86.1
19	75	9.7	11.7	82.9	67	9.4	11.0	85.5
20	81	9.7	11.8	82.2	85	9.2	11.2	82.1
21	69	10.0	12.0	83.3	80	9.4	11.4	82.5
22	69	9.6	12.2	78.7	57	9.4	11.5	81.7
23	48	9.9	12.4	79.8	64	9.4	11.7	80.3
12 - 23	1,008	9.3			1,047	9.0		
24	198	10.9	12.6	86.5	205	10.6	11.9	89.1
25	84	10.6	12.8	82.8	83	10.3	12.1	85.1
26	75	10.2	13.0	78.5	80	10.2	12.3	82.9
27	86	10.7	13.1	81.7	95	9.9	12.4	79.8
28	83	11.1	13.3	83.5	94	10.4	12.6	82.5
29	102	11.1	13.5	82.2	102	10.4	12.8	81.2
30	121	11.2	13.7	81.8	116	10.7	12.9	82.9
31	78	11.4	13.8	82.6	72	11.1	13.1	84.7
32	69	11.4	14.0	81.4	87	11.3	13.3	85.0
33	73	11.9	14.2	83.8	71	10.6	13.4	79.1
34	46	12.0	14.4	83.3	50	11.2	13.6	82.4
35	54	12.1	14.5	83.4	47	11.2	13.8	81.2
24 - 35	1,069	11.1			1,102	10.6		
36	307	12.6	14.7	85.7	300	12.4	13.9	89.2
37	77	12.3	14.8	83.1	63	11.9	14.3	83.2
38	86	12.6	15.0	84.0	75	12.1	14.4	84.0
39	59	12.7	15.2	83.6	71	12.4	14.6	84.9
40	80	12.6	15.3	82.4	92	12.3	14.8	83.1
41	87	13.1	15.5	84.5	86	12.5	14.9	83.9
42	109	13.0	15.7	82.8	79	12.2	15.1	80.8
43	70	12.9	15.8	81.6	56	13.0	15.2	85.5
44	74	13.2	16.0	82.5	70	12.6	15.4	81.8
45	58	13.4	16.2	82.7	59	12.4	15.5	80.0
46	48	12.9	16.4	78.7	32	12.7	15.7	80.9
47	36	13.3	16.5	80.6	53	12.8	15.8	81.0
36 - 47	1,091	12.8			1,036	12.4		

Table 1 (contd.)

Age in Months	Boys				Girls			
	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median
48	309	13.9	16.7	83.2	273	13.5	16.0	84.3
49	42	13.5	16.9	79.9	56	13.8	16.1	85.7
50	71	14.1	17.0	82.9	61	13.6	16.2	84.0
51	82	14.1	17.2	82.0	69	13.7	16.4	83.4
52	48	14.6	17.4	83.9	55	12.9	16.5	78.2
53	79	14.8	17.5	84.6	87	13.5	16.7	80.8
54	92	14.7	17.7	83.1	91	14.3	16.8	85.1
55	63	14.8	17.9	82.7	58	13.8	17.0	81.2
56	83	14.6	18.0	81.1	65	13.9	17.1	81.3
57	56	14.8	18.2	81.3	48	14.2	17.2	82.6
58	52	15.0	18.3	82.0	50	14.5	17.4	83.3
59	50	15.4	18.5	83.2	36	14.1	17.5	80.6
48 - 59	1,027	14.4			949	13.7		
6 - 59	4,772	11.4			4,665	10.8		

Table 2 Percentage Distribution of Degree of Protein-Energy Malnutrition(PEM) According to Weight for Age Percent Median Classification, for Children Aged 6-59 Months by Age-Group (in Months), Sex and Region.

Region and Age-Group (in Months)	Male				Female				Both Sexes			
	Normal	Mild PEM	Mederate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Server PEM	Normal	Mild PEM	Mederate PEM	Severe PEM
All Regions												
6 - 11	31.6	41.5	21.4	5.5	40.8	40.8	14.8	3.6	36.0	41.1	18.3	4.6
12 - 23	24.5	44.1	25.7	5.7	27.2	42.4	24.2	6.2	25.9	43.3	24.9	5.9
24 - 35	29.7	43.8	22.1	4.4	29.4	42.6	24.6	3.4	29.6	43.2	23.4	3.9
36 - 59	23.8	50.0	22.8	3.5	27.9	45.4	22.1	4.6	25.8	47.7	22.5	4.0
6 - 59	26.2	46.3	23.1	4.4	29.6	43.5	22.3	4.5	27.9	44.9	22.7	4.5
Arssi												
6 - 11	41.8	40.0	14.5	3.6	42.5	45.0	10.0	2.5	42.1	42.1	12.6	3.2
12 - 23	37.9	43.7	16.1	2.3	37.0	46.7	14.1	2.2	37.4	45.3	15.1	2.2
24 - 35	34.6	46.7	15.9	2.8	35.3	50.0	14.7	0.0	34.9	48.3	15.3	1.4
36 - 59	31.5	57.1	10.3	1.1	38.8	46.8	11.7	2.7	35.2	51.9	11.0	1.9
6 - 59	34.9	49.7	13.4	2.1	37.9	47.4	12.8	1.9	36.4	48.5	13.1	2.0
Bale												
6 - 11	30.8	50.0	19.2	0.0	48.7	28.2	20.5	2.6	38.5	40.7	19.8	1.1
12 - 23	36.6	45.1	15.5	2.8	30.7	53.3	14.7	1.3	33.6	49.3	15.1	2.1
24 - 35	52.4	33.3	12.7	1.6	45.9	38.8	15.3	0.0	48.6	36.5	14.2	0.7
36 - 59	31.8	54.9	11.6	1.7	49.6	38.4	8.0	4.0	39.3	48.0	10.1	2.7
6 - 59	36.2	48.5	13.6	1.7	44.1	40.7	13.0	2.2	40.0	44.8	13.3	1.9
Gamo Gofa												
6 - 11	34.8	27.9	25.6	11.6	61.1	22.2	13.9	2.8	46.8	25.3	20.3	7.6
12 - 23	20.6	51.5	22.1	5.9	34.4	37.7	23.0	4.9	27.1	45.0	22.5	5.4
24 - 35	42.9	33.9	21.4	1.8	23.7	42.4	30.5	3.4	33.0	38.3	26.1	2.6
36 - 59	19.9	53.9	21.3	5.0	33.8	41.0	23.7	1.4	26.8	47.5	22.5	3.2
6 - 59	26.3	46.1	22.1	5.5	35.3	38.3	23.7	2.7	30.8	42.3	22.9	4.0
Gojjam												
6 - 11	20.0	46.0	26.0	6.0	31.5	44.4	14.8	9.3	26.9	45.2	20.2	7.7
12 - 23	12.7	32.4	45.1	9.9	16.0	39.5	30.9	13.6	14.5	36.3	37.5	11.8
24 - 35	27.9	44.2	22.1	5.8	13.7	49.5	36.8	0.0	20.4	47.0	29.8	2.8
36 - 59	18.8	45.5	34.4	1.3	20.4	46.5	30.6	2.5	19.6	46.0	32.5	1.9
6 - 59	20.2	42.7	32.4	4.7	19.4	45.5	30.0	5.2	19.8	44.1	31.1	4.9

Table 2 (contd.)

Region and Age-Group (in Months)	Male				Female				Both Sexes			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
Gonder												
6 - 11	16.7	40.7	37.0	5.6	16.3	51.0	24.5	8.2	16.5	45.6	31.1	6.8
12 - 23	12.5	37.5	34.4	15.6	7.3	45.1	37.8	9.8	10.1	41.0	36.0	12.9
24 - 35	15.6	44.8	35.4	4.2	13.6	50.0	30.7	5.7	14.7	47.3	33.2	4.9
36 - 59	13.8	52.2	39.6	4.4	12.5	52.5	30.8	4.2	13.3	52.3	30.1	4.3
6 - 59	14.3	45.4	33.1	7.2	12.1	49.9	31.6	6.5	13.3	47.4	32.4	6.9
Hararge												
6 - 11	24.5	44.9	16.3	14.3	48.6	43.2	8.1	0.0	34.9	44.2	12.8	8.1
12 - 23	30.1	42.5	23.3	4.1	31.0	35.7	23.8	9.5	30.6	38.9	23.6	7.0
24 - 35	41.4	37.1	17.1	4.3	40.8	33.8	21.1	4.2	41.1	35.5	19.1	4.3
36 - 59	27.1	48.6	20.7	3.6	28.5	43.0	20.9	7.6	27.9	45.6	20.8	5.7
6 - 59	30.4	44.3	19.9	5.4	33.7	39.4	20.3	6.6	32.1	41.8	20.1	6.0
Illubabor												
6 - 11	37.9	34.5	20.7	6.9	33.3	54.5	9.1	3.0	35.5	42.2	14.5	4.8
12 - 23	23.9	28.4	0.0	0.0	24.2	38.7	30.6	6.5	24.0	43.4	29.5	3.1
24 - 35	27.0	39.2	28.4	5.4	47.1	26.5	22.1	4.4	36.6	33.1	25.4	4.9
36 - 59	29.1	41.7	26.0	3.1	34.4	41.2	19.8	4.6	31.8	41.5	22.9	3.9
6 - 59	28.3	41.8	26.6	3.4	35.0	38.8	21.4	4.8	31.6	40.3	24.0	4.1
Kefa												
6 - 11	46.4	28.6	25.0	0.0	43.8	40.6	15.6	0.0	45.0	35.0	20.0	0.0
12 - 23	29.9	37.3	22.4	10.4	24.6	37.7	29.0	8.7	27.2	37.5	25.7	9.6
24 - 35	23.8	45.2	26.2	4.8	19.0	46.8	29.1	5.1	21.5	46.0	27.6	4.9
36 - 59	22.7	48.2	22.7	6.4	23.7	50.8	19.5	5.9	23.2	49.4	21.2	6.2
6 - 59	26.6	43.4	23.8	6.3	24.8	45.6	23.8	5.7	25.7	44.5	23.8	6.0
Shewa												
6 - 11	40.0	46.3	11.3	2.5	43.7	44.8	9.2	2.3	41.9	45.5	10.2	2.4
12 - 23	26.5	47.1	22.9	33.5	38.4	37.9	20.0	3.7	32.8	42.2	21.4	3.6
24 - 35	28.7	48.1	17.1	6.1	31.7	44.2	21.6	2.5	30.3	45.1	19.5	4.2
36 - 59	26.0	50.1	20.4	3.4	28.7	46.2	21.1	3.9	27.3	48.2	20.8	3.7
6 - 59	28.0	48.7	19.4	3.9	33.1	43.8	19.8	3.4	30.6	46.2	19.6	3.6

Table 2 - (contd.)

Region and Age-Group (in months)	Male				Male				Both Sexes			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
Sidamo												
6 - 11	37.2	44.2	16.3	2.3	58.6	17.2	20.7	3.4	45.8	33.3	18.1	2.8
12 - 23	35.9	45.3	17.2	1.6	40.0	44.6	12.3	3.1	38.0	45.0	14.7	2.3
24 - 35	32.0	48.0	14.0	6.0	39.7	41.3	15.9	3.2	36.3	44.2	15.0	4.4
36 - 59	21.8	47.2	27.5	3.5	25.5	40.4	28.4	5.7	23.7	43.8	27.9	4.6
6 - 59	28.8	46.5	21.4	3.3	34.9	39.3	21.5	4.4	31.8	42.9	21.4	3.9
Wellega												
6 - 11	32.3	43.5	19.4	4.8	40.0	44.6	10.8	4.6	36.2	44.1	15.0	4.7
12 - 23	13.2	47.4	33.3	6.1	18.3	51.7	24.2	5.8	15.8	49.6	28.6	6.0
24 - 35	21.6	51.8	22.3	4.3	30.0	41.8	23.6	4.5	25.3	47.4	22.9	4.4
36 - 59	15.8	46.6	32.1	5.6	17.9	45.5	29.0	7.6	16.8	46.2	30.6	6.6
6 - 59	18.6	47,7	28.4	5.3	23.3	46.1	24.5	6.2	20.9	46.9	26.5	5.7
Wello												
6 - 11	14.7	35.3	38.2	11.8	32.3	35.5	32.3	0.0	23.1	35.4	35.4	6.2
12 - 23	20.0	50.0	25.0	5.0	13.6	39.4	37.9	9.1	16.7	44.4	31.7	7.1
24 - 35	28.6	33.3	34.9	3.2	15.9	36.6	37.8	9.8	21.4	35.2	36.6	6.9
36 - 59	26.4	51.8	19.1	2.7	20.8	53.5	20.8	5.0	23.7	52.6	19.9	3.8
6 - 59	26.4	51.8	19.1	2.7	18.9	43.2	31.1	6.8	21.4	44.1	28.9	5.7

Table 3 - Centile Distribution of Weight for Age of Children Aged 6 - 59 Months by Sex and Region

Region & Sex	Centile													No.of Cases in the Sample
	0-2	3-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	Total	
All Regions														
Male	42.2	7.8	12.3	13.6	7.4	5.1	2.7	2.4	2.5	1.5	1.1	1.5	100	4,772
Female	40.4	8.2	11.5	12.2	7.7	4.6	4.8	3.0	2.4	1.2	1.6	2.4	100	4,665
B.Sexes	41.3	8.0	11.9	12.9	7.5	4.9	3.8	2.7	2.4	1.4	1.4	1.9	100	9,437
Arssi														
Male	29.3	8.5	13.2	17.3	7.9	5.1	5.3	3.2	4.6	2.1	1.6	1.8	100	433
Female	28.4	8.3	13.0	13.5	8.8	5.9	5.7	3.6	3.8	3.8	2.1	3.1	100	422
B.Sexes	28.9	8.4	13.1	15.4	8.3	5.5	5.5	3.4	4.2	2.9	1.9	2.5	100	855
Bale														
Male	27.3	8.4	15.3	15.9	9.2	6.1	5.8	3.1	3.1	1.1	2.5	2.2	100	359
Female	25.9	9.0	8.3	16.7	9.9	4.9	8.0	4.6	4.9	1.5	2.5	3.7	100	324
B.Sexes	26.6	8.6	12.0	16.3	9.5	5.6	6.9	3.8	4.0	1.3	2.5	2.9	100	683
Gamo-Gofa														
Male	41.6	6.8	10.4	15.6	7.8	6.8	1.9	2.6	2.3	1.9	1.3	1.0	100	308
Female	39.7	5.8	10.5	9.5	10.8	5.4	5.4	4.7	3.1	1.4	1.0	2.7	100	295
B.Sexes	40.6	6.3	10.4	12.6	9.3	6.1	3.6	3.6	2.7	1.7	1.2	1.8	100	603
Gojjam														
Male	49.9	7.2	12.2	11.9	5.3	4.4	2.5	1.1	2.8	0.3	1.7	0.8	100	361
Female	52.5	8.3	11.6	10.9	6.2	1.8	2.6	2.3	1.6	1.0	1.0	0.3	100	387
B.Sexes	51.2	7.8	11.9	11.4	5.7	3.1	2.5	1.7	2.1	0.7	1.3	0.5	100	748
Gonder														
Male	55.8	9.1	11.6	11.1	4.9	3.7	0.7	0.7	1.0	1.2	0.0	0.0	100	405
Female	55.8	11.2	11.5	10.3	5.3	0.9	2.7	0.9	0.6	0.6	0.1	0.0	100	339
B.Sexes	55.8	10.1	11.6	10.8	5.1	2.4	1.6	0.8	0.8	0.9	0.1	0.0	100	744
Hararge														
Male	38.9	7.5	10.8	13.6	8.4	7.2	2.7	2.4	3.9	1.2	2.4	0.9	100	332
Female	39.4	8.0	11.4	9.4	9.4	4.3	6.9	3.7	0.6	0.9	2.6	3.4	100	350
B.Sexes	39.1	7.8	11.1	11.4	8.9	5.7	4.8	3.1	2.2	1.0	2.5	2.2	100	682
Illubabor														
Male	43.4	6.4	11.4	12.5	8.4	4.7	2.0	2.4	2.4	2.0	2.0	2.4	100	297
Female	36.7	8.5	9.9	12.2	8.2	5.8	5.8	5.1	2.4	0.3	1.7	3.4	100	294
B.Sexes	40.1	7.4	10.7	12.4	8.3	5.2	3.9	3.7	2.4	1.2	1.9	2.9	100	591
Kefa														
Male	41.9	9.1	12.2	11.6	7.2	6.9	2.8	2.2	2.8	1.6	0.9	0.9	100	320
Female	42.6	8.7	11.4	13.1	6.0	3.7	4.4	2.3	3.0	0.7	1.7	2.3	100	298
B.Sexes	42.2	8.9	11.8	12.3	6.6	5.3	3.6	2.3	2.9	1.1	1.3	1.6	100	618
Shewa														
Male	39.3	7.8	13.2	13.8	9.3	4.6	2.5	2.5	2.0	1.8	0.7	2.5	100	842
Female	35.5	7.8	12.5	13.5	8.3	5.4	5.6	3.0	2.3	1.3	1.7	3.1	100	859
B.Sexes	37.4	7.8	12.8	13.6	8.8	5.0	4.1	2.8	2.2	1.5	1.2	2.8	100	1,701
Sidamo														
Male	41.5	9.0	8.4	13.7	6.0	6.4	4.3	4.3	1.3	2.0	0.3	2.7	100	299
Female	39.3	6.7	9.7	10.7	7.4	7.0	4.7	2.3	4.4	1.3	2.3	4.0	100	298
B.Sexes	40.4	7.9	9.0	12.2	6.7	6.7	4.5	3.4	2.8	1.7	1.3	3.4	100	597
Wellega														
Male	51.0	5.8	13.8	12.9	5.5	4.0	1.5	2.0	1.6	1.1	0.2	0.5	100	549
Female	44.7	9.1	12.5	11.9	5.6	5.6	3.7	2.7	1.2	1.0	0.8	1.3	100	519
B.Sexes	47.9	7.4	13.2	12.5	5.5	4.8	2.5	2.3	1.4	1.0	0.5	0.9	100	1,068
Wello														
Male	47.6	7.9	12.0	12.0	7.9	2.6	1.1	3.0	2.2	1.5	1.1	1.0	100	267
Female	51.8	6.8	12.1	11.8	6.4	3.2	1.8	1.1	1.4	0.4	1.4	1.8	100	280
B.Sexes	49.7	7.3	12.1	11.9	7.1	2.9	1.5	2.0	1.8	0.9	1.3	1.5	100	547

Table 4: Percentage Distribution of Weight for Age SD-Sceres by Sex and Age Group (in Months) (All Regions Combined)

Sex/Age Group (in Months)	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the Sample
Male														
6 - 11	1.4	1.9	10.2	18.7	30.4	23.3	9.5	2.8	1.0	0.0	0.3	0.5	100	579
12 - 23	0.9	4.7	13.2	26.9	29.3	16.2	5.6	2.1	0.5	0.5	0.2	0.1	100	1,008
24 - 35	0.8	3.2	12.2	27.6	26.6	19.7	8.2	1.3	0.4	0.0	0.0	0.0	100	1,069
36 - 59	0.8	1.4	7.7	23.4	39.9	19.9	5.9	0.9	0.1	0.0	0.0	0.0	100	2,116
6 - 59	0.9	2.6	10.2	24.5	33.5	19.5	6.8	1.5	0.4	0.1	0.1	0.1	100	4,772
Female														
6 - 11	0.4	0.8	6.8	13.9	35.3	26.7	9.4	4.0	1.3	0.8	0.2	0.4	100	532
12 - 23	1.0	3.7	8.9	25.4	30.2	20.5	5.4	2.9	1.4	0.5	0.0	0.1	100	1,047
24 - 35	0.5	2.3	12.6	24.5	29.4	17.5	9.0	2.9	0.8	0.2	0.2	0.0	100	1,101
36 - 59	1.0	2.4	8.9	24.8	33.9	21.1	7.3	0.7	0.1	0.0	0.0	0.0	100	1,985
6 - 59	0.8	2.5	9.6	23.6	32.2	20.8	7.5	2.1	0.7	0.2	0.1	0.1	100	4,665
Both Sexes														
6 - 11	0.9	1.3	8.6	16.4	32.8	24.9	9.4	3.3	1.2	0.4	0.3	0.5	100	1,111
12 - 23	0.9	4.2	11.0	26.1	29.7	18.4	5.5	2.5	1.0	0.5	0.1	0.1	100	2,055
24 - 35	0.7	2.7	12.4	26.0	28.0	18.6	8.6	2.1	0.6	0.1	0.1	0.0	100	2,170
36 - 59	0.9	1.9	8.3	24.1	37.0	20.5	6.5	0.8	0.1	0.0	0.0	0.0	100	4,101
6 - 59	0.8	2.5	9.9	24.1	32.9	20.1	7.1	1.8	0.5	0.2	0.1	0.1	100	9,437

Table 5-Percentage Distribution of Weight for Age SD-Scores by Ses and Region.

Region and Sex	SD - Scores												
	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the sample
All Regions														
Male	0.9	2.6	10.2	24.5	33.5	19.5	6.8	1.5	0.4	0.1	0.1	0.1	100	4,772
Female	0.8	2.5	9.6	23.6	32.2	20.8	7.5	2.1	0.7	0.2	0.1	0.1	100	4,665
B.Sexes	0.8	2.5	9.9	24.1	32.9	20.1	7.1	1.8	0.5	0.2	0.1	0.1	100	9,437
Arssi														
Male	0.2	1.2	5.8	18.7	37.0	23.8	10.2	3.0	0.2	0.0	-	0.0	100	433
Female	0.5	1.2	5.7	17.8	35.5	23.0	11.6	3.1	0.9	0.5	-	0.2	100	422
B.Sexes	0.4	1.2	5.7	18.2	36.3	23.4	10.9	3.0	0.6	0.2	-	0.1	100	855
Bale														
Male	0.0	1.4	5.8	15.9	38.2	26.7	8.4	2.2	0.6	-	0.6	0.3	100	359
Female	0.3	0.9	4.6	17.0	30.6	29.3	12.3	3.4	1.5	-	0.0	0.1	100	324
B.Sexes	0.1	1.2	5.3	16.4	34.6	28.0	10.2	2.8	1.0	-	0.3	0.1	100	683
Gamo-Gofa														
Male	0.6	3.6	11.4	18.8	37.7	18.8	7.1	1.3	0.0	0.3	-	0.3	100	308
Female	0.7	1.4	8.1	26.4	26.8	23.7	10.2	2.0	0.7	0.0	-	0.0	100	295
B.Sexes	0.7	2.5	9.8	22.6	32.3	21.2	8.6	1.7	0.3	0.2	-	0.1	100	603
Gojjam														
Male	1.1	2.2	15.0	28.0	31.3	15.8	5.0	1.1	0.0	-	0.3	0.3	100	361
Female	0.3	2.3	12.1	33.3	31.8	14.0	5.2	0.8	0.3	-	0.0	0.0	100	387
B.Sexes	0.7	2.3	13.5	30.7	31.6	14.8	5.1	0.9	0.1	-	0.1	0.1	100	748
Gonder														
Male	0.5	4.7	15.8	30.9	32.1	13.3	2.7	-	-	-	-	-	100	405
Female	0.6	4.4	13.9	30.1	37.8	10.9	2.4	-	-	-	-	-	100	339
B.Sexes	0.5	4.6	14.9	30.5	34.7	12.2	2.6	-	-	-	-	-	100	744
Hararge														
Male	2.7	1.2	7.8	22.9	31.9	22.6	8.7	1.8	0.3	0.0	0.0	-	100	332
Female	3.1	2.9	9.1	18.9	29.4	25.4	6.9	2.9	0.6	0.6	0.3	-	100	350
B.Sexes	2.9	2.1	8.5	20.8	30.6	24.0	7.8	2.3	0.4	0.3	0.1	-	100	682
Illubabor														
Male	0.3	3.0	12.5	23.2	30.3	19.5	8.1	1.7	1.0	-	-	0.3	100	297
Female	0.3	3.4	9.5	20.7	29.6	23.5	8.5	3.1	1.4	-	-	0.0	100	294
B.Sexes	0.3	3.2	11.0	22.0	29.9	21.5	8.3	2.4	1.2	-	-	0.2	100	591

Table 5 (contd.)

Region and Sex	SD - Scores												
	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the sample
Kefa														
Male	1.3	3.8	13.4	21.6	32.5	19.1	7.2	0.6	0.0	0.6	-	-	100	320
Female	0.3	3.4	12.1	24.2	33.9	16.1	6.7	3.0	0.3	0.0	-	-	100	298
B.Sexes	0.8	3.6	12.8	22.8	32.2	17.6	7.0	1.8	0.2	0.3	-	-	100	618
Shewa														
Male	1.5	2.0	6.7	24.9	34.4	20.9	6.5	1.9	0.7	0.2	0.1	0.0	100	842
Female	0.3	2.1	8.3	21.8	32.5	23.5	7.7	2.1	1.3	0.2	0.1	0.1	100	859
B.Sexes	0.9	2.1	7.5	23.3	33.5	22.2	7.1	2.0	1.0	0.2	0.1	0.1	100	1,701
Sidamo														
Male	0.0	2.3	8.7	25.4	31.8	21.4	7.4	2.0	0.7	0.0	0.3	-	100	299
Female	0.3	3.0	8.1	23.5	28.5	22.1	9.7	3.7	0.0	1.0	0.0	-	100	298
B.Sexes	0.2	2.7	8.4	24.5	30.2	21.8	8.5	2.8	0.3	0.5	0.2	-	100	597
Wellega														
Male	0.5	3.1	10.9	33.0	31.7	15.3	4.9	0.2	0.2	0.0	0.0	0.2	100	549
Female	1.0	2.7	11.9	23.7	35.1	18.7	5.2	0.8	0.4	0.2	0.2	0.2	100	519
B.Sexes	0.7	2.9	11.4	28.5	33.3	16.9	5.1	0.5	0.3	0.1	0.1	0.2	100	1,068
Wello														
Male	0.7	3.0	14.2	24.7	31.8	16.5	6.7	1.9	0.4	0.0	-	-	100	267
Female	2.1	2.9	12.9	30.0	30.4	15.7	4.3	1.1	0.4	0.4	-	-	100	280
B.Sexws	1.5	2.9	13.5	27.4	31.1	16.1	5.5	1.5	0.4	0.2	-	-	100	547

Figure 1-OBSERVED AND REFERENCE POPULATION MEDIAN WEIGHT FOR AGE BY AGE (IN MONTHS) FOR MALE CHILDREN AGED 6-59 MONTHS, RURAL 1983

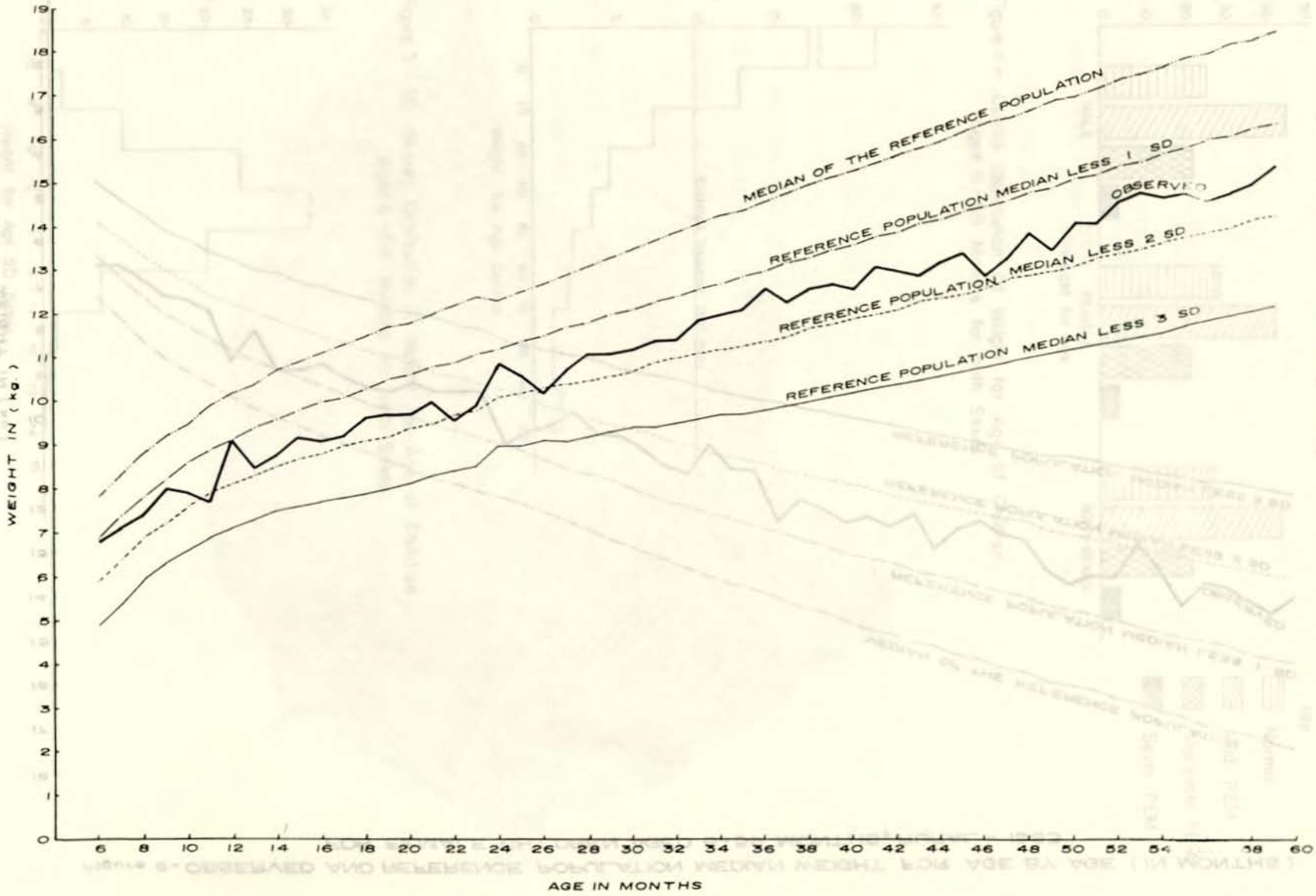


Figure 2 - OBSERVED AND REFERENCE POPULATION MEDIAN WEIGHT FOR AGE BY AGE (IN MONTHS) FOR FEMALE CHILDREN AGED 6-59 MONTHS, RURAL - 1983

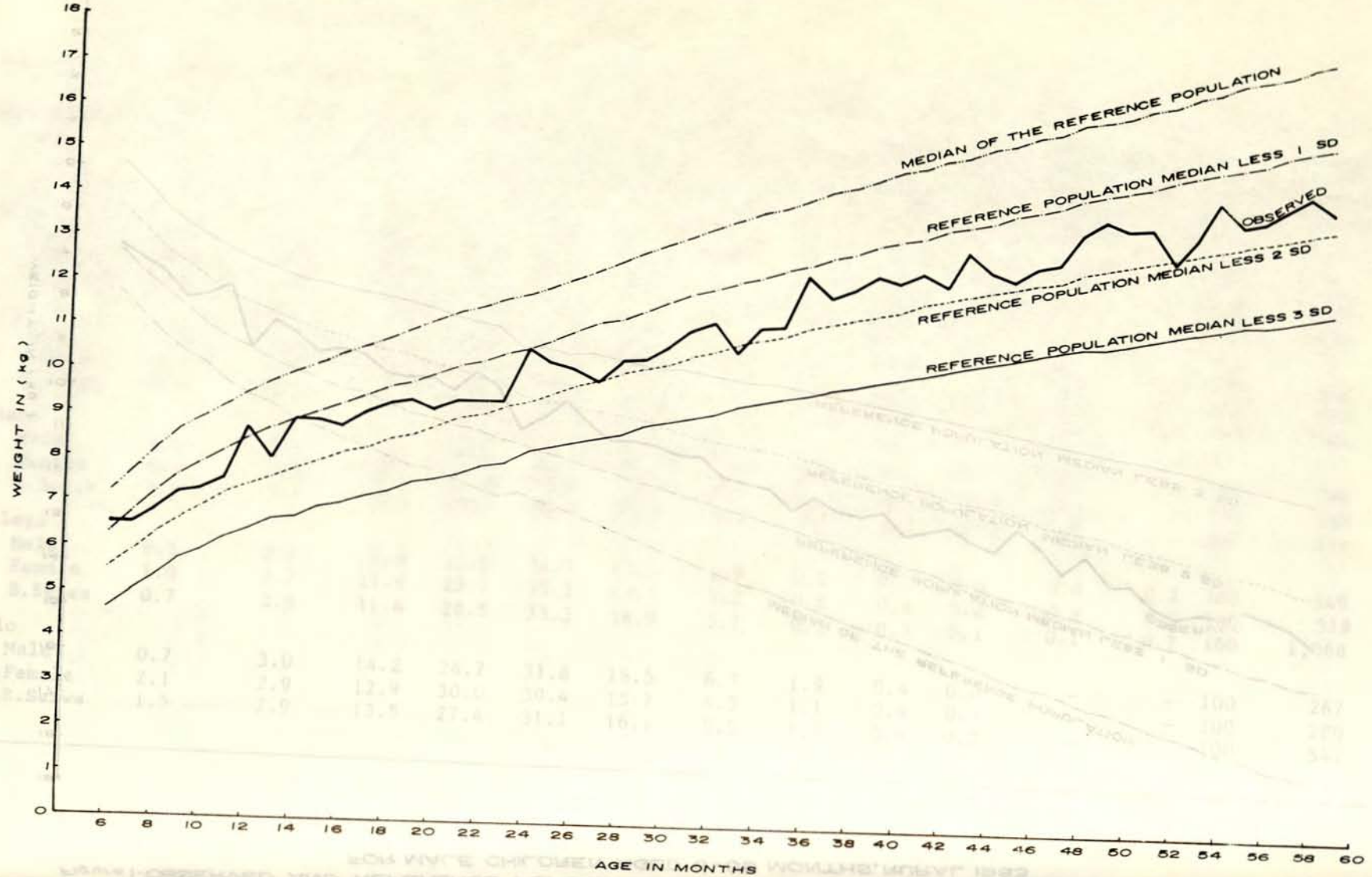


Figure 3- Percentage Distribution Of Nutritional Status Of Children Aged 6-59 Months Accordinding to weight for Age Indicator.

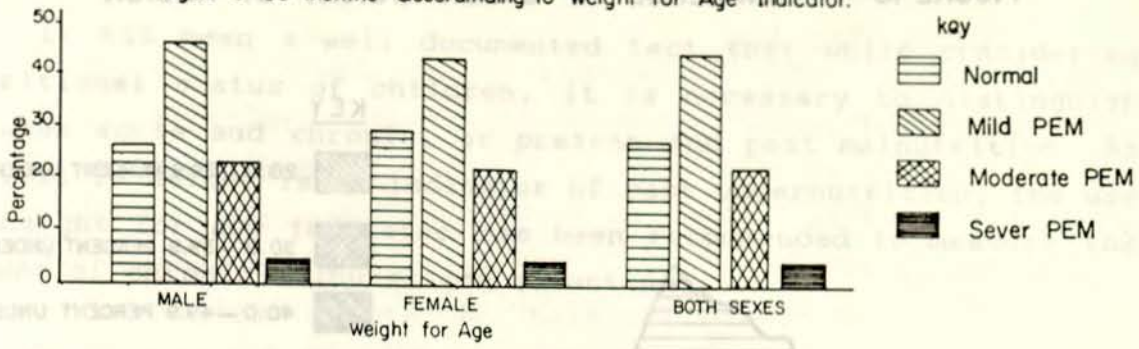


Figure 4 - Centile Distribution Of Weight for Age of Children Aged 6-59 Months for both Sexes.

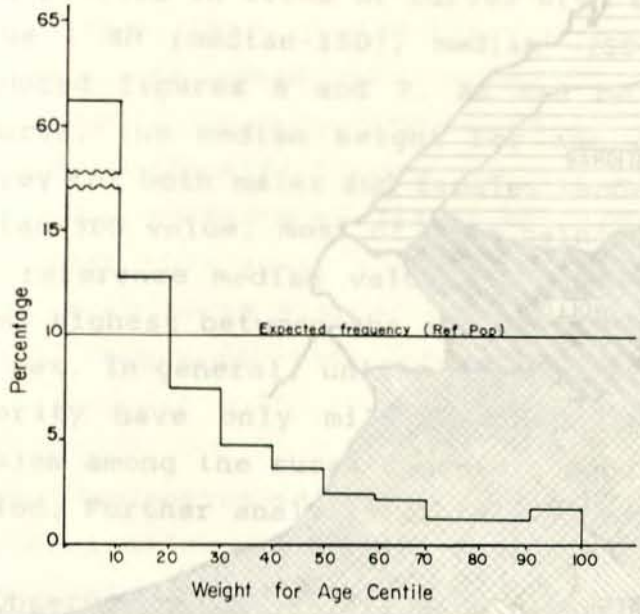


Figure 5 - SD Scores Distribution of Weight for Age of Children Aged 6 -59 Months for both Sexes.

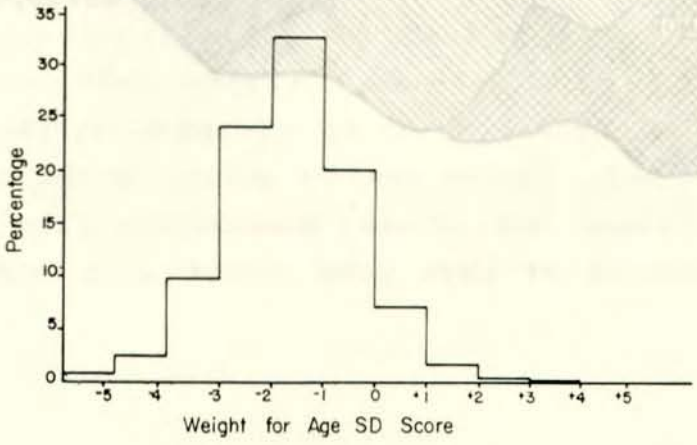
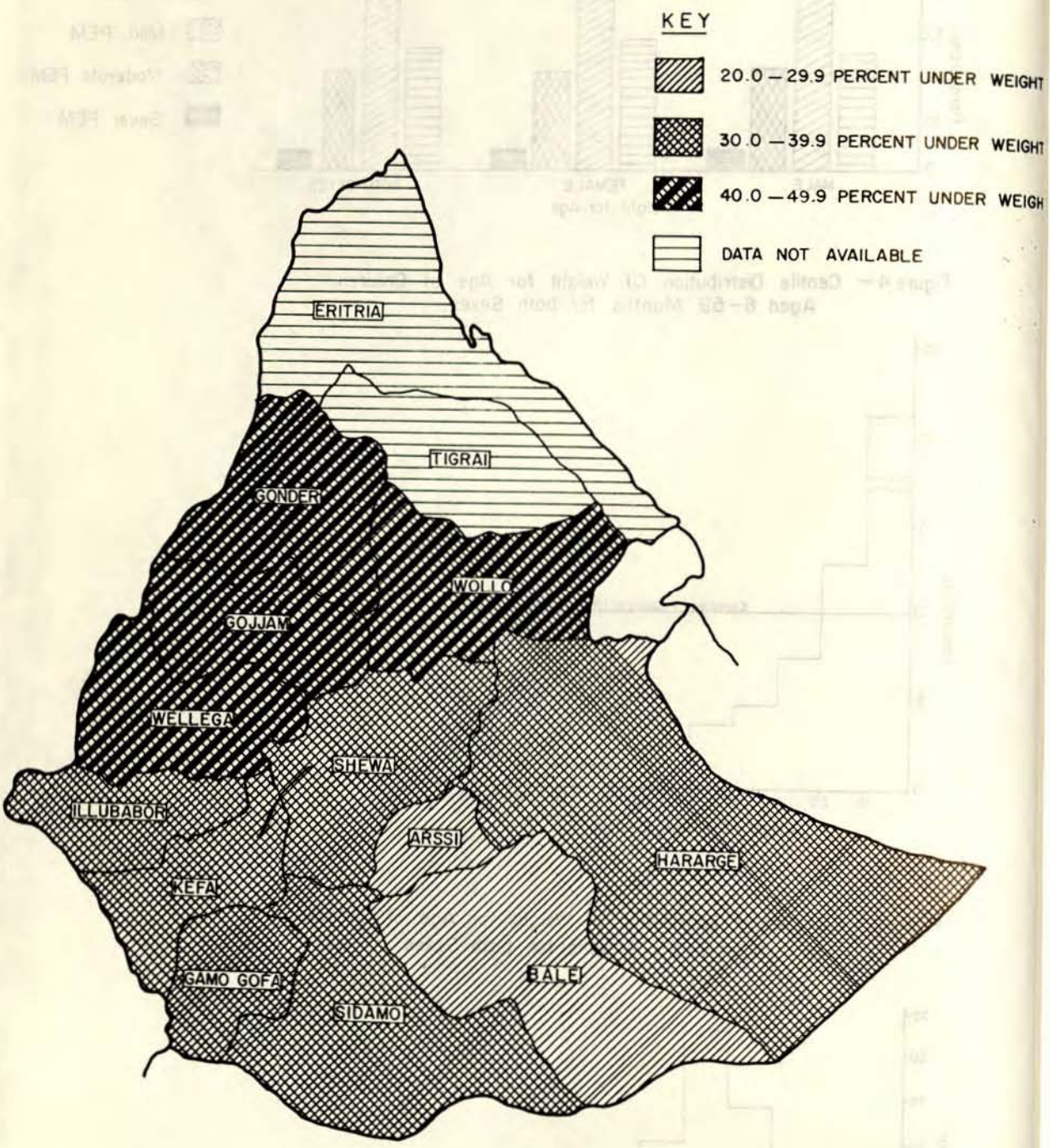


FIGURE 16 PREVALENCE OF UNDER WEIGHT BY REGION



(b)- Height for Age

It has been a well documented fact that while considering nutritional status of children, it is necessary to distinguish between acute and chronic, or present and past malnutrition. As deficit in height is an indicator of past undernutrition, the use of height for age indicator has been recommended to measure the extent of chronic malnutrition (stunting).

The result of the survey on median height for age and the corresponding reference values are tabulated in Table 6. The result when plotted in terms of curves with the reference median, median minus 1 SD (median-1SD), median -2SD and median-3SD values has produced figures 6 and 7. As can be seen from these table and figures, the median height for age of children covered by the survey for both males and females tended to follow the reference's median-3DS value, most of them being between 85 to 90 percent of the reference median values. A marked decrease in growth rates seems highest between the age of 20 to 23 months, irrespective of the sex. In general, unlike the case for weight for age, where the majority have only mild malnutrition, stunting seems a major problem among the rural sedentary population by 1983 post-harvest period. Further analysis of this is presented below.

i- Observed Height relative to refernce Median of Height for Age

Degree of deficit in height for age according to percent of median criterion, has been classified in Nutritional Status Categories as follows;

Classification as percent of The Reference Median Height for Age	Nutritional Status
95% and above	Normal
90 - 94.9%	Mild undernutrition
85 - 89.9%	Moderate Undernutrition
below 85%	Severe Undernutrition

Table 7 and Figure 8 present the nutritional status of the rural sedentary population's children in 1983, according to the above percentage of median height for age classification. It appears from this table and figure that about 24 percent of children aged 6-59 months were severely malnourished. When broken by sex, this was just over 23 percent for males and about 24 percent for females. Further, this was reported to be as high as 23 percent even for children in the age-group 6-11 months. This is unbelievably high. In fact stunting is not expected to reach such a high level among children until about 2 years old. Thus this unexpected result for these very young infants seems to a large extent due to errors in measuring length. Hence this part of the result should be treated with caution.

Despite this, among children covered by the survey only about 26 percent were found to be normally nourished while about 27 percent had mild malnutrition and about 48 percent were suffering from either moderate or severe malnutrition. It could be also noted that malnutrition was reported to be slightly higher among boys than among girls, excepting for the age group 12-23 months. For example, the proportion for either normal nutritional status or only mild malnutrition for boys were about 50, 43 and 53 percent in the age-groups 6-11, 12-23 and 36-59 months, respectively, while this was about 53, 51 and 55 percent in the age-groups 6-11, 12-23, and 36-59 months, respectively, in the case of girls. In the age-group 25-35 months, nutritional status was, however, in favor of boys (i.e., about 56 percent of boys were either with normal

nutritional status or with only mild malnutrition as against 54 percent for girls).

Among the regions, the proportion of severely malnourished children varied from highest: 34 percent in Gamo-Goffa, 33 percent in Gonder and 31 percent in Wello to lowest: 14 percent in Wellega, 17 percent in Arssi and 18 percent in Bale. Likewise, proportion moderately malnourished varied from highest: 30 percent in Gojjam, to lowest: 20 percent in Bale, and the proportion for either normal nutritional status or only mild malnutrition varied from highest, 63 and 62 percent in Wellega and Bale, respectively, to lowest, 40 percent in Gonder (see Table 7 for further detail).

ii- Decile of Height for Age

Height for age data of an individual child (for all ages combined) by sex have been used to place the child in the appropriate decile of the reference population's height for age bracket, in order to give a clear picture of the difference between the sampled and the reference population, and the result have been summarized in Table 8. The frequency distribution of these decile have been presented in Figure 9. As it was the case in weight for age decile the bulk of the population under consideration was classified within the first decile bracket. In fact over three-fifth (about 62 percent) of the children aged 6-59 months were classified within the first third of first decile bracket. The corresponding proportions by sex were about 63 and 61 percent for boys and girls, respectively, which indicate the presence of slightly higher long-term or chronic malnutrition among boys than girls.

Among the twelve regions considered, the proportion of children classified in the first third of the first decile bracket was found to be highest (76.2%) in Gonder, followed by Wello (69.3%), Gamo-Goffa (67.8%) and Gojjam (67.5%), while this was lowest (53.0%) in Bale, followed by Illubabor (54.0%), Wellega

(55.3%), Hararge (56.6%) and Arssi (59.8%). All these differentials were in line with the results in the preceding section.

iii- SD-Score of Height for Age

The preceding findings on height for age measurements are next summarized using the standard deviation distribution (SD-Scores) around the reference population median. SD-Scores of height for age nutritional indicators were calculated using the following formulae:

Height for Age SD-Score = $\frac{\text{Child's height - Reference median height; same age \& sex}}{\text{SD of Reference; same age \& sex}}$

The computed values of SD-Scores of height for age measurements are summarized in Tables 9 and 10 and Figure 10. An examination of these tables and figure shows that about 60 percent of children in the rural areas had their height for age SD-Scores less than or equal to -2. This means that about 60 percent of the rural sedentary children were having low height for age as the result of past malnutrition. By sex, this was about 61 percent for boys and about 59 percent for girls.

The data also show the following common patterns of relationship between age and malnutrition (chronic malnutrition as implied by low height for age) by sex; (i) the proportion of children with low height for age (stunted) was found to be lowest in the age-group 36-59 months, while it was highest in the age-group 12-23 months irrespective of sex, (ii) excepting for the age-group 24-35 months, proportions of boys with low height for age were higher than that of girls, and (iii) Both Sexes together the percentage of having low height for age were increasing up to the age-group of 12-23 and started declining thereafter monotonically. For example, taking the two sexes together, the proportions of children with SD-Score values less than or equal to -2 were 62.7, 67.6, 57.4 and 56.6 percent in the age-groups 6-11, 12-23, 24-35

Table 6- Median Height for Age of Children Aged 6 - 59 Months as Compared to the Standards Developed by the United States National Center for Health Statistics by Sex and Age in Single Months, (all Regions Combined)

Age in Months	Boys				Girls			
	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median
6	93	61.9	67.8	91.3	92	60.9	65.9	92.4
7	106	63.0	69.5	90.6	99	61.2	67.6	90.5
8	113	64.1	71.0	90.3	115	62.7	69.1	90.7
9	93	64.4	72.3	89.1	91	63.7	70.4	90.5
10	94	64.1	73.6	87.1	67	64.2	71.8	89.4
11	78	64.7	74.9	86.4	67	65.0	73.1	88.9
6 - 11	577	63.7			531	62.9		
12	140	69.5	76.1	91.3	149	69.1	74.3	93.0
13	56	68.7	77.2	89.0	72	65.8	75.5	87.2
14	80	68.8	78.3	87.9	92	69.3	76.7	90.4
15	86	70.6	79.4	88.9	86	70.6	77.8	90.7
16	71	70.3	80.4	87.4	77	67.6	78.9	85.7
17	111	73.0	81.4	89.7	88	72.5	79.9	90.7
18	122	73.0	82.4	88.6	130	73.1	80.9	90.4
19	75	73.6	83.3	88.4	67	73.3	81.9	89.5
20	81	73.3	84.2	87.1	85	73.1	82.9	88.2
21	69	73.8	85.1	86.1	80	73.2	83.8	87.4
22	69	74.3	86.0	86.4	57	73.6	84.7	86.9
23	48	75.1	86.8	86.5	64	73.5	85.6	85.9
12 - 23	1,008	72.1			1,047	71.4		
24	198	80.1	87.6	91.4	205	78.3	86.5	90.5
25	84	78.0	88.5	88.1	83	77.3	87.3	88.5
26	75	77.3	89.2	86.7	80	79.8	88.2	90.5
27	86	79.9	90.0	88.8	95	76.6	89.0	86.1
28	83	81.5	90.8	89.8	94	79.7	89.8	88.8
29	102	81.2	91.6	88.6	102	78.3	90.6	86.4
30	121	81.9	92.3	88.7	116	79.6	91.3	87.2
31	78	82.6	93.0	88.8	72	81.3	92.1	88.3
32	69	82.1	93.7	87.6	87	81.4	92.8	87.7
33	73	83.6	94.5	88.5	71	82.0	93.5	87.7
34	46	83.6	95.2	87.8	50	82.3	94.2	87.4
35	54	83.8	95.8	87.5	47	84.2	94.9	88.7
24 - 35	1,069	81.2			1,102	79.8		
36	307	86.7	96.5	89.8	300	85.8	95.6	89.7
37	77	86.4	95.6	90.4	63	84.2	94.6	89.0
38	86	87.1	96.3	90.4	75	86.1	95.3	90.3
39	59	89.2	97.0	92.0	71	88.1	96.0	91.8
40	80	86.4	97.7	88.4	92	87.4	96.6	90.5
41	87	88.3	98.4	89.7	86	87.8	97.3	90.2
42	109	89.1	99.1	89.9	79	89.4	97.9	91.3
43	70	87.0	99.7	87.3	56	90.1	98.6	91.4
44	74	91.5	100.4	91.1	70	87.2	99.2	87.9
45	58	91.4	101.0	90.5	59	89.2	99.8	89.4
46	48	90.3	101.7	88.8	32	89.7	100.4	89.3
47	36	91.5	102.3	89.4	53	89.9	101.0	89.0

Table 6- (contd.)

Age in Month	Boys				Girls			
	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median
36 - 47	1,091	88.1			1,036	87.1		
48	309	93.5	102.9	90.9	273	92.4	101.6	90.9
49	42	93.5	103.6	90.3	56	94.5	102.2	92.5
50	71	94.5	104.2	90.7	61	93,0	102.8	90.5
51	82	93.0	104.8	88.7	69	93.9	103.4	90.8
52	48	93.6	105.4	88.8	55	91.8	104.0	88.3
53	79	96.8	106.0	91.3	87	92.9	104.5	88.9
54	92	95.5	106.6	89.6	91	95.8	105.1	91.2
55	63	95.3	107.1	89.0	58	95.1	105.6	90.1
56	83	95.9	107.7	89.0	65	92.3	106.2	86.9
57	56	94.4	108.3	87.2	48	94.9	106.7	88.9
58	52	96.3	108.8	88.5	50	96.5	107.3	89.9
59	50	97.1	109.4	88.8	36	95.7	107.8	88.8
8 - 59	1,027	94.6			949	93.6		
6 - 59	4,772	81.8			4,665	80.2		

Table7- Percentage Distribution of Degree of Protein-Energy Malnutrition (PEM) According to Height for Age Percent Median Classification, for Children Aged 6-59 Months by Age-Group (in Months), Sex and Region.

Region & Age-Group (in Months)	Male				Female				Both Sexes			
	Norml	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
All Regions												
6 - 11	20.2	29.9	27.8	22.1	25.9	27.1	23.1	23.9	23.0	28.5	25.6	23.0
12 - 23	19.8	22.9	28.6	28.7	21.6	29.6	20.4	28.4	20.7	26.3	24.4	28.5
24 - 35	27.9	28.2	23.9	20.0	27.7	25.9	25.3	21.1	27.8	27.0	24.7	20.6
36 - 59	27.9	25.3	23.7	23.1	28.7	26.3	22.0	23.0	28.3	25.8	23.9	23.6
6 - 59	25.3	26.0	25.3	23.4	26.5	27.1	22.6	23.8	25.9	26.5	23.9	23.6
Arssi												
6 - 11	18.2	32.7	32.7	16.4	22.5	35.0	22.5	20.0	20.0	33.7	28.4	17.9
12 - 23	19.5	26.4	33.3	20.7	20.7	34.8	21.7	22.8	20.1	30.7	27.4	21.8
24 - 35	24.3	35.5	25.2	15.0	30.4	37.3	25.5	6.9	27.3	36.4	25.4	11.0
36 - 59	25.0	34.8	24.5	15.8	32.4	27.1	22.9	17.6	28.8	30.9	23.7	16.7
6 - 59	22.9	33.0	27.5	16.6	28.4	32.0	32.2	16.4	25.6	32.5	25.4	16.5
Bale												
6 - 11	11.5	42.3	17.3	28.8	25.6	28.2	23.1	23.1	17.6	36.3	19.8	26.4
12 - 23	21.1	25.4	31.0	22.5	20.0	38.7	18.7	22.7	20.5	32.2	24.7	22.6
24 - 35	36.5	19.0	30.2	14.3	34.1	31.8	18.8	15.3	35.1	26.4	23.6	14.9
36 - 59	41.6	25.4	20.2	12.7	39.2	33.6	12.0	15.2	40.6	28.9	16.8	13.8
6 - 59	32.3	26.7	23.7	17.3	31.8	33.6	16.7	17.9	32.1	30.0	20.4	17.6
Gamo-Gofa												
6 - 11	9.3	25.6	30.2	34.9	38.9	13.9	16.7	30.6	24.1	20.3	24.1	31.6
12 - 23	19.1	22.1	27.9	30.9	29.5	19.7	13.1	37.7	24.0	20.9	20.9	34.1
24 - 35	37.5	16.1	17.9	28.6	22.0	18.6	23.7	35.6	29.6	17.4	20.9	32.2
36 - 59	22.0	19.9	21.3	36.9	23.7	20.9	28.1	27.3	22.9	20.4	24.6	32.1
6 - 59	22.4	20.5	23.4	33.8	26.4	19.3	22.7	31.5	24.5	19.9	23.1	32.5
Gojjam												
6 - 11	16.0	36.0	36.0	12.0	7.4	31.5	25.9	35.2	11.5	33.7	30.8	24.0
12 - 23	11.3	21.1	29.6	38.0	9.9	28.4	23.5	38.3	10.5	25.0	26.3	38.2
24 - 32	31.4	30.2	24.4	14.0	20.0	26.3	40.0	13.7	25.4	28.2	32.6	13.8
36 - 59	25.3	33.1	27.3	14.3	21.7	30.6	30.6	17.2	23.5	31.8	28.9	15.8
6 - 59	22.7	30.5	28.3	18.6	16,8	29.2	30.7	23.3	19.7	29.8	29.5	21.0

Table 7 - (contd.)

Region & Age-Group (in Months)	Male				Female				Both Sexes			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
Gonder												
6 - 11	9.3	29.6	33.3	27.9	18.4	20.4	30.6	30.6	13.6	25.2	32.0	29.1
12 - 23	9.4	16.7	27.1	46.9	13.4	23.2	24.4	39.0	11.2	19.7	25.8	43.3
24 - 35	13.5	32.3	30.2	24.0	13.6	23.9	27.3	35.2	13.6	28.3	28.8	29.3
36 - 59	16.4	26.4	28.3	28.9	20.0	25.0	31.7	23.3	17.9	25.8	29.7	26.5
6 - 59	13.1	25.9	29.1	31.9	16.5	23.6	28.6	31.3	14.7	24.9	28.9	31.6
Hararge												
6 - 11	34.7	24.5	16.3	24.5	48.6	16.2	8.1	27.0	49.7	20.9	12.8	25.6
12 - 23	26.0	23.3	21.9	28.8	29.8	17.9	20.2	32.1	28.0	20.4	21.0	30.6
24 - 35	31.4	27.1	21.4	20.0	42.3	21.1	21.1	15.5	36.9	24.1	21.3	17.7
36 - 59	31.4	18.6	22.9	27.1	35.4	21.5	21.5	21.5	33.6	20.1	22.1	24.2
6 - 59	30.7	22.3	21.4	25.6	36.9	20.0	19.7	23.4	33.9	21.1	20.5	24.7
Illubabor												
6 - 11	41.4	27.6	10.3	20.7	36.4	30.3	18.2	15.2	38.7	29.0	14.5	17.7
12 - 23	23.9	17.9	34.3	23.9	24.2	25.8	30.6	19.4	24.0	21.7	32.6	21.7
24 - 35	40.5	18.9	18.9	21.6	41.2	16.2	27.9	14.7	40.8	17.6	23.2	18.3
36 - 59	35.4	26.0	22.8	15.7	41.2	24.4	16.8	17.6	38.4	25.2	19.8	16.7
6 - 59	34.7	22.6	23.2	19.5	37.1	23.5	22.4	17.0	35.9	23.0	22.8	18.3
Kefa												
6 - 11	17.9	21.4	35.7	25.0	31.3	34.4	18.8	15.6	25.0	28.3	26.7	20.0
12 - 23	26.9	20.9	25.4	26.9	17.4	23.2	24.6	34.8	22.1	22.1	25.0	30.9
24 - 35	27.4	28.6	19.0	25.0	20.3	19.0	30.4	30.4	23.9	23.9	24.5	27.6
36 - 59	31.9	22.7	23.4	22.0	29.7	22.9	16.9	30.5	30.9	22.8	20.5	25.9
6 - 59	28.4	23.8	23.8	24.1	24.5	23.2	22.5	29.9	26.5	23.5	23.1	26.9
Shewa												
6 - 11	22.5	23.8	25.0	28.8	18.4	24.1	31.0	26.4	20.4	24.0	28.1	27.5
12 - 23	20.0	20.6	25.3	34.1	26.8	26.8	17.4	28.9	23.6	23.9	21.1	31.4
24 - 35	26.0	30.4	21.0	22.7	27.6	29.1	18.1	25.1	26.8	29.7	19.5	23.9
36 - 59	27.5	26.0	20.2	26.3	24.8	24.3	21.4	29.5	26.2	25.2	20.8	27.8
6 - 59	25.2	25.7	21.9	27.3	25.3	26.0	20.7	28.1	25.2	25.8	21.3	27.7
Sidamo												
6 - 11	18.6	37.2	27.9	16.3	41.4	17.2	31.0	10.3	27.8	29.2	29.2	13.9
12 - 23	25.0	35.9	21.9	17.2	26.2	40.0	15.4	18.5	25.6	38.0	18.6	17.8
24 - 35	22.0	22.0	30.0	26.0	30.2	20.6	30.2	19.0	26.5	21.2	30.1	22.1
36 - 59	19.7	14.8	32.4	33.1	21.3	22.0	23.4	33.3	20.5	18.4	27.9	33.2
6 - 59	21.1	23.7	29.1	26.1	26.2	25.2	23.8	24.8	23.6	24.5	26.5	25.5

Table 7 (contd.)

Region & Age-Group (in Months)	Male				Female				Both Sexes			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
Wellega												
6 - 11	27.4	37.1	29.0	6.5	23.1	46.2	24.6	6.2	25.2	41.7	26.8	6.3
12 - 23	23.7	26.3	35.1	14.9	22.5	45.8	19.2	12.5	23.1	36.3	26.9	13.7
24 - 35	30.9	37.4	23.5	8.6	32.7	30.0	23.6	13.6	31.7	34.1	23.3	10.8
36 - 59	32.9	25.6	22.2	19.2	31.3	34.4	19.2	15.2	32.1	29.9	20.7	17.2
6 - 59	29.9	30.1	25.9	14.2	28.5	37.6	20.8	13.1	29.2	33.7	23.4	13.7
Wello												
6 - 11	20.6	11.8	41.2	26.5	29.0	12.9	9.7	48.4	24.6	12.3	26.2	36.9
12 - 23	13.3	21.7	30.0	35.0	12.1	24.2	21.2	42.4	12.7	23.0	25.4	38.9
24 - 35	19.0	15.9	31.7	33.3	20.7	22.0	26.8	30.5	20.0	19.3	29.0	31.7
36 - 59	21.8	25.5	27.3	25.5	27.7	28.7	19.8	23.8	24.6	27.0	23.7	24.6
6 - 59	19.1	20.6	30.7	29.6	22.1	23.9	21.1	32.9	20.7	22.3	25.8	31.3

Table 8 Centile Distribution of Height for Age of Children Aged 6-59 Months by Sex and Region.

Region & Sex	Centile													Number in the Sample
	0-2	3-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	Total	
All Regions														
Male	63.0	4.7	7.0	6.4	3.5	3.0	2.2	2.3	1.3	1.5	1.3	3.8	100	4,772
Female	61.3	4.6	7.5	7.1	3.5	3.4	1.7	2.0	1.6	1.7	1.6	4.1	100	4,665
B.Sexes	62.1	4.7	7.2	6.7	3.5	3.2	2.0	2.2	1.5	1.6	1.5	3.9	100	9,437
Arssi														
Male	62.4	6.5	8.1	5.1	1.6	2.8	3.0	1.4	1.6	1.8	1.4	4.4	100	433
Female	57.1	6.2	8.5	6.2	3.8	4.3	1.7	2.8	1.7	0.7	2.6	4.5	100	422
B.Sexes	59.8	6.3	8.3	5.6	2.7	3.5	2.3	2.1	1.6	1.3	2.0	4.4	100	855
Bale														
Male	54.0	5.8	7.8	6.1	6.1	4.2	1.9	3.9	1.9	2.5	1.1	3.9	100	359
Female	51.9	4.6	11.7	5.2	3.1	5.2	2.5	2.5	2.2	2.8	2.8	5.6	100	324
B.Sexes	53.0	5.3	9.7	5.7	4.7	4.7	2.2	3.2	2.0	2.6	2.2	4.7	100	683
Gamo Gofa														
Male	68.8	2.3	6.2	5.2	3.6	3.6	2.6	2.3	1.6	1.0	0.6	2.3	100	308
Female	66.8	3.1	4.1	6.1	3.4	3.4	1.4	2.7	1.4	1.4	1.0	5.4	100	295
B.Sexes	67.8	2.7	5.1	5.6	3.5	3.5	2.0	2.5	1.5	1.2	0.8	3.8	100	603
Gojjam														
Male	62.6	7.8	7.5	6.6	3.6	2.2	1.7	1.9	1.1	2.2	1.7	1.1	100	361
Female	72.1	4.4	6.2	7.5	2.1	2.3	0.5	0.8	1.3	0.5	0.5	1.8	100	387
B.Sexes	67.5	6.0	6.8	7.1	2.8	2.3	1.1	1.3	1.2	1.3	1.1	1.5	100	748
Gonder														
Male	76.0	3.7	6.9	3.7	2.5	1.7	1.5	1.2	0.2	0.5	0.0	2.0	100	405
Female	76.4	1.8	5.6	7.1	2.7	1.2	0.6	0.6	0.3	0.6	1.8	1.5	100	339
B.Sexes	76.2	2.8	6.3	5.2	2.6	1.5	1.1	0.9	0.3	0.5	0.8	1.7	100	744
Hararge														
Male	59.9	4.2	5.1	5.1	2.7	3.0	3.6	2.7	2.4	2.4	1.5	7.2	100	332
Female	53.4	4.6	5.1	7.1	4.0	2.9	2.0	2.3	4.0	3.7	2.0	8.9	100	350
B.Sexes	56.6	4.4	5.1	6.2	3.4	2.9	2.8	2.5	3.2	3.1	1.8	1.8	100	682
Illubabor														
Male	55.6	3.4	6.4	6.1	4.7	4.4	1.7	3.0	2.4	2.4	2.4	7.7	100	297
Female	52.4	5.1	4.8	10.5	3.7	2.4	2.7	2.7	3.4	1.7	2.0	8.5	100	294
B.Sexes	54.0	4.2	5.6	8.3	4.2	3.4	2.2	2.9	2.9	2.0	2.2	8.1	100	591
Kefa														
Male	61.6	3.8	6.3	7.5	4.1	2.8	2.5	1.9	0.0	1.3	1.6	6.6	100	320
Female	65.4	3.7	6.0	6.4	5.0	3.4	1.7	2.7	0.8	1.3	0.3	2.3	100	298
B.Sexes	63.4	3.7	6.1	7.0	4.5	3.1	2.1	2.3	0.5	1.3	1.0	4.5	100	618
Shewa														
Male	63.2	4.4	7.2	7.1	2.6	3.1	2.4	3.0	1.0	1.4	1.3	3.3	100	842
Female	61.5	4.9	8.3	7.5	4.0	3.1	1.9	1.7	1.0	1.7	2.0	2.4	100	859
B.Sexes	62.3	4.6	7.8	7.3	3.3	3.1	2.1	2.4	1.0	1.6	1.6	2.9	100	1,701
Sidamo														
Male	68.2	4.3	6.0	7.0	2.0	1.3	2.3	2.7	1.0	1.0	0.3	3.7	100	299
Female	60.2	3.4	10.1	4.7	4.4	4.0	1.7	2.3	2.3	2.0	0.7	4.0	100	298
B.Sexes	64.3	3.9	8.0	5.9	3.2	2.7	2.0	2.5	1.7	1.5	0.5	3.9	100	597
Wellega														
Male	56.1	5.1	8.7	8.7	6.0	3.5	2.7	2.4	1.6	0.9	2.2	2.0	100	549
Female	54.5	6.4	10.4	7.9	3.3	4.0	2.1	1.9	1.3	2.1	1.3	4.6	100	519
B.Sexes	55.3	5.7	9.6	8.3	4.7	3.7	2.4	2.2	1.5	1.5	1.8	3.3	100	1,068
Wello														
Male	71.5	4.5	4.5	6.4	2.6	2.6	0.0	1.1	1.1	1.1	0.7	3.7	100	267
Female	67.1	5.0	5.7	7.5	2.9	4.3	1.4	1.1	0.4	1.4	1.1	2.7	100	280
B.Sexes	69.3	4.8	5.1	6.9	2.7	3.5	0.7	1.1	0.7	1.3	0.9	2.9	100	547

Table 9 Percentage Distribution of Height for Age SD-Scores by Sex and Age-Group (in Months)

(All Regions Combined)

Sex & Age Group (in Months)	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the Sample
Male														
6 - 11	12.3	10.9	18.0	25.2	18.1	7.4	2.8	1.7	0.5	0.7	0.3	2.1	100	579
12 - 23	16.3	14.2	19.6	20.5	13.4	8.4	3.9	1.8	0.6	0.4	0.3	0.6	100	1,008
24 - 35	10.1	9.2	16.8	20.0	20.2	10.7	5.9	3.6	2.2	0.7	0.2	0.3	100	1,069
36 - 59	8.4	9.3	16.9	22.7	19.6	12.4	7.0	2.7	0.7	0.1	0.1	0.0	100	2,116
6 - 59	10.9	10.5	17.6	22.0	18.2	10.6	5.6	2.6	1.0	0.4	0.2	0.5	100	4,772
Female														
6 - 11	12.8	7.8	18.4	20.7	19.0	11.1	5.1	1.5	1.1	0.6	1.1	1.7	100	532
12 - 23	12.9	13.0	16.8	22.1	17.7	8.7	4.6	1.3	1.0	0.8	0.5	0.8	100	1,047
24 - 35	9.5	10.0	15.6	23.5	18.1	12.4	4.6	3.0	1.7	1.0	0.1	0.4	100	1,101
36 - 59	10.4	10.0	14.3	20.8	20.9	11.7	7.4	2.7	1.3	0.3	0.2	0.1	100	1,985
6 - 59	11.0	10.3	15.6	21.7	19.3	11.1	5.9	2.3	1.3	0.6	0.3	0.5	100	4,665
Both Sexes														
6 - 11	12.5	9.0	18.2	23.0	18.5	9.2	3.9	1.6	0.8	0.6	0.7	1.9	100	1,111
12 - 23	14.5	13.6	18.2	21.3	15.6	8.6	4.2	1.6	0.8	0.6	0.4	0.7	100	2,055
24 - 35	9.8	9.6	16.2	21.8	19.1	11.6	5.3	3.3	2.0	0.9	0.1	0.3	100	2,170
36 - 59	9.4	9.7	15.7	21.8	20.2	12.1	7.2	2.7	1.0	0.2	0.1	0.0	100	4,101
6 - 59	11.0	10.4	16.6	21.8	18.7	10.9	5.7	2.5	1.2	0.5	0.3	0.5	100	9,437

Table 10 Percentage Distribution of Height for Age SD-Scores by Sex and Region.

Region and Sex	Centile													
	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the Sample
All Regions														
Male	10.9	10.5	17.6	22.0	18.2	10.6	5.6	2.6	1.0	0.4	0.2	0.5	100	4,772
Female	11.0	10.3	15.6	21.7	19.3	11.1	5.9	2.3	1.3	0.6	0.3	0.5	100	4,665
B.Sexes	11.0	10.4	16.6	21.8	18.7	10.9	5.7	2.5	1.2	0.5	0.3	0.5	100	9,437
Arssi														
Male	5.5	8.5	19.4	25.6	21.9	8.3	5.8	2.5	1.4	0.5	-	0.5	100	433
Female	5.2	9.0	14.7	25.8	20.9	12.6	6.2	3.1	0.9	1.2	-	0.5	100	422
B.Sexes	5.4	8.8	17.1	25.7	21.4	10.4	6.0	2.8	1.2	0.8	-	0.5	100	855
Bale														
Male	7.0	8.6	15.0	22.6	19.5	13.4	8.9	2.2	1.1	0.3	0.6	0.8	100	359
Female	7.4	9.6	11.7	19.4	23.8	12.3	8.0	5.6	1.5	0.0	0.6	0.0	100	327
B.Sexes	7.2	9.1	13.5	21.1	21.5	12.9	8.5	3.8	1.3	0.1	0.6	0.4	100	683
Gamo Gofa														
Male	14.0	14.9	20.8	17.9	13.3	11.4	4.9	1.6	0.6	0.3	0.0	0.3	100	308
Female	16.9	11.2	17.3	19.7	11.5	11.9	6.1	3.1	0.7	0.7	0.3	0.7	100	295
B.Sexes	15.4	13.1	19.1	18.7	12.4	11.6	5.5	2.3	0.7	0.5	0.2	0.5	100	603
Gojjam														
Male	8.6	9.7	17.5	23.8	22.7	9.7	5.8	1.9	0.3	-	0.0	0.0	100	361
Female	8.3	11.4	21.2	28.9	18.3	7.0	2.8	0.8	0.8	-	0.3	0.3	100	387
B.Sexes	8.4	10.6	19.4	26.5	20.5	8.3	4.3	1.3	0.5	-	0.1	0.1	100	748
Gonder														
Male	15.1	14.6	17.3	26.4	15.8	6.9	2.0	1.7	0.0	0.0	0.2	0.0	100	405
Female	13.9	14.2	20.6	26.3	13.6	6.8	1.8	1.8	0.3	0.3	0.3	0.3	100	339
B.Sexes	14.5	14.4	18.8	26.3	14.8	6.9	1.9	1.7	0.1	0.1	0.3	0.1	100	744
Hararge														
Male	13.9	10.8	14.8	19.9	13.0	11.7	8.1	2.7	1.5	1.2	0.0	2.4	100	332
Female	9.1	12.6	14.3	15.1	17.4	10.6	10.6	3.7	3.7	1.4	0.3	1.1	100	350
Both Sexes	11.4	11.7	14.5	17.4	15.2	11.1	9.4	3.2	2.6	1.3	0.1	1.8	100	682

Table 10 (contd.)

Region and Sex	Centile													No. of Cases in the Sample
	-5 or below	-4.9 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	
Illubabor														
Male	11.8	7.1	14.8	20.2	16.5	11.8	8.1	6.4	1.7	0.7	0.3	0.7	100	297
Female	7.1	7.8	13.9	19.7	20.4	12.6	8.2	4.1	2.0	2.4	1.4	0.3	100	294
B.Sexes	9.5	7.4	14.4	20.0	18.4	12.2	8.1	5.2	1.9	1.5	0.8	0.5	100	591
Kefa														
Male	11.3	10.9	17.2	18.8	19.1	11.3	3.8	4.1	2.2	0.3	0.6	0.6	100	320
Female	13.8	12.4	17.4	20.1	15.4	12.4	6.0	0.3	1.3	0.0	0.0	0.7	100	298
B.Sexes	12.5	11.7	17.3	19.4	17.3	11.8	4.9	2.3	1.8	0.2	0.3	0.6	100	618
Shewa														
Male	14.0	10.7	15.4	20.9	18.5	10.6	5.2	2.9	0.8	0.5	0.2	0.2	100	842
Female	15.8	9.4	15.3	18.5	20.1	12.0	5.2	1.6	1.0	0.3	0.2	0.3	100	859
B.Sexes	14.9	10.1	15.3	19.7	19.3	11.3	5.2	2.2	0.9	0.4	0.2	0.3	100	1,701
Sidamo														
Male	9.7	11.0	25.1	21.4	15.1	9.0	5.0	1.0	1.7	0.3	0.3	0.3	100	299
Female	11.1	11.7	14.1	20.1	19.5	12.1	6.7	1.7	1.3	1.0	0.3	0.3	100	298
B.Sexes	10.4	11.4	19.6	20.8	17.3	10.6	5.9	1.3	1.5	0.7	0.3	0.3	100	597
Wellega														
Male	5.1	8.4	17.1	23.5	22.0	14.8	6.2	1.8	0.5	0.2	0.0	0.4	100	549
Female	6.4	5.8	12.1	26.8	26.4	11.2	6.2	1.9	1.9	0.4	0.4	0.6	100	519
B.Sexes	5.7	7.1	14.7	25.1	24.2	13.0	6.2	1.9	1.2	0.3	0.2	0.5	100	1,068
Wello														
Male	16.5	12.0	21.7	19.9	16.1	6.0	3.4	3.0	1.1	0.4	-	0.0	100	267
Female	15.4	13.6	17.1	18.9	17.1	11.8	3.6	1.8	0.0	0.0	-	0.7	100	280
B.Sexes	15.9	12.8	19.4	19.4	16.6	9.0	3.5	2.4	0.5	0.2	-	0.4	100	547

Figure 11 - OBSERVED AND REFERENCE POPULATION MEDIAN WEIGHT FOR HEIGHT FOR MALE CHILDREN AGED 6-59 MONTHS, RURAL 1983

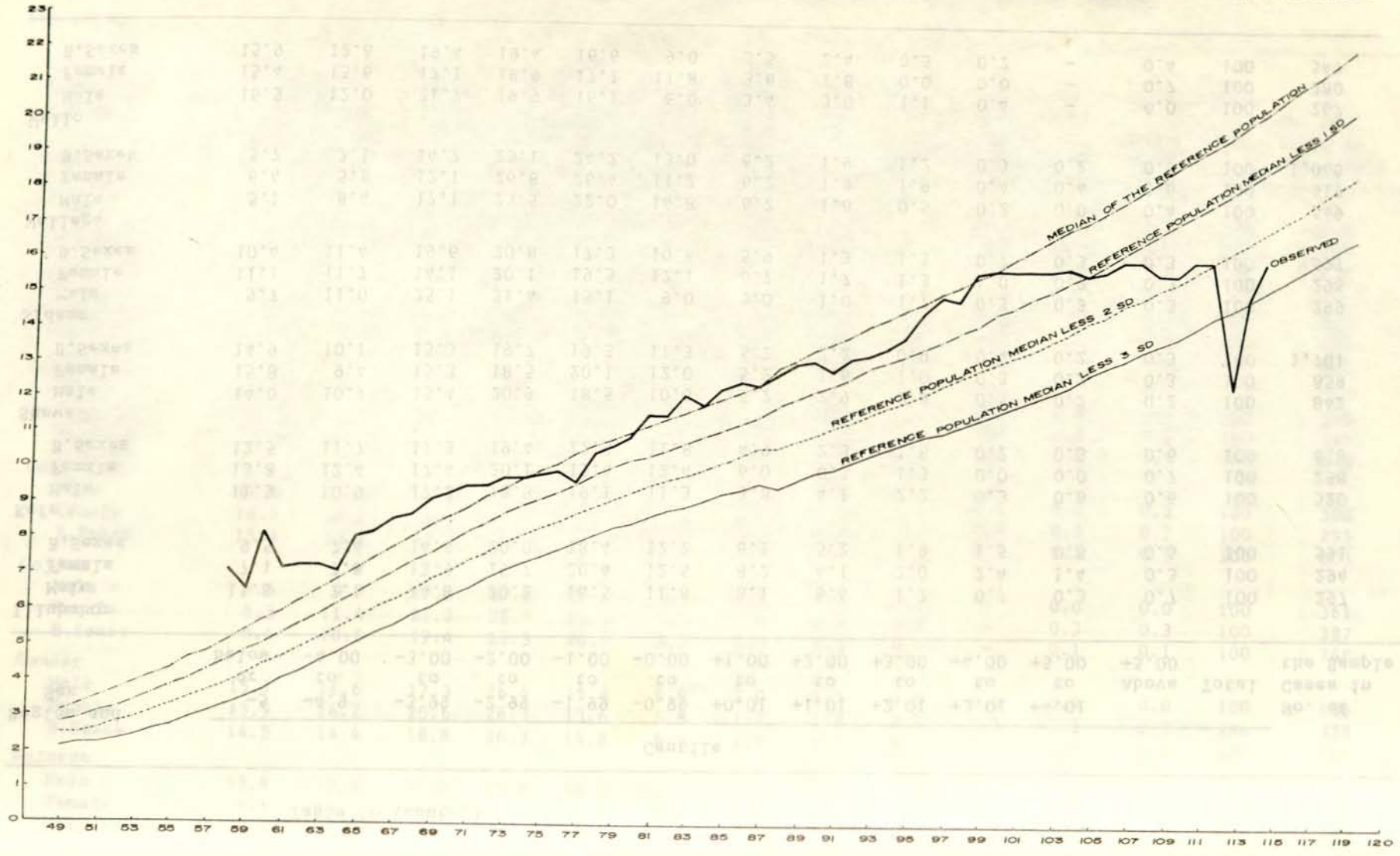


Figure 12 - OBSERVED AND REFERENCE POPULATION MEDIAN WEIGHT FOR HEIGHT FOR FEMALE CHILDREN AGED 6-59 MONTHS, RURAL 1983

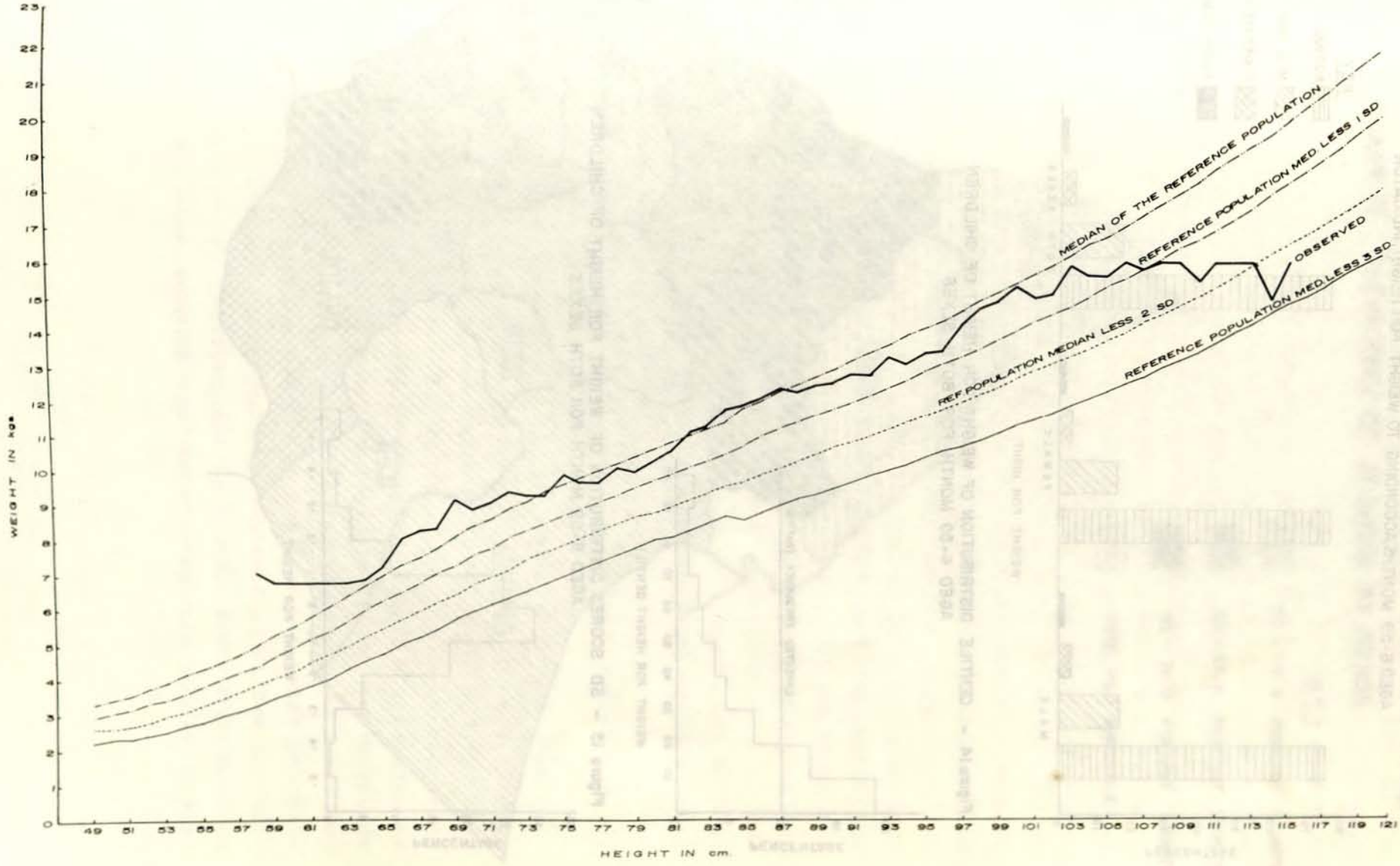


Figure 13 - PERCENTAGE DISTRIBUTION OF NUTRITIONAL STATUS OF CHILDREN AGED 6-59 MONTHS ACCORDING TO WEIGHT FOR HEIGHT INDICATOR

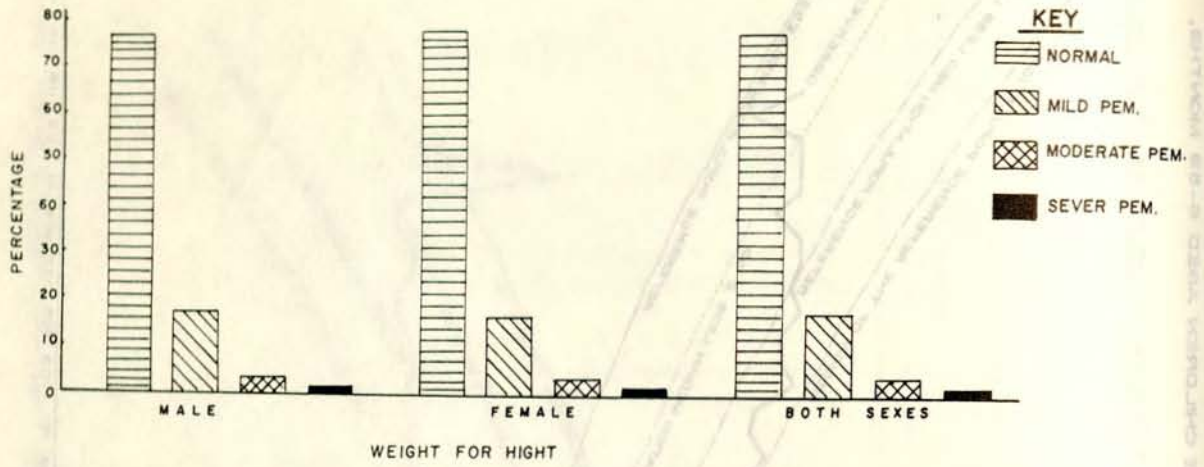


Figure 14 - CENTILE DISTRIBUTION OF WEIGHT FOR HEIGHT OF CHILDREN AGED 6-59 MONTH FOR BOTH SEXES

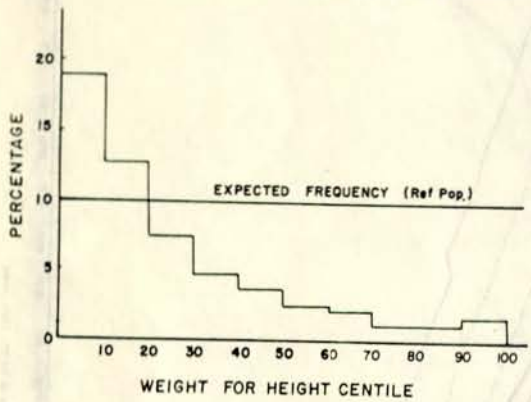


Figure 15 – SD SCORES DISTRIBUTION OF WEIGHT FOR HEIGHT OF CHILDREN AGED 6-59 MONTH FOR BOTH SEXES

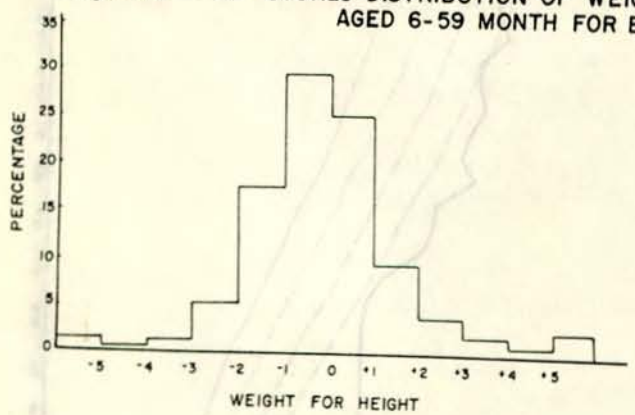
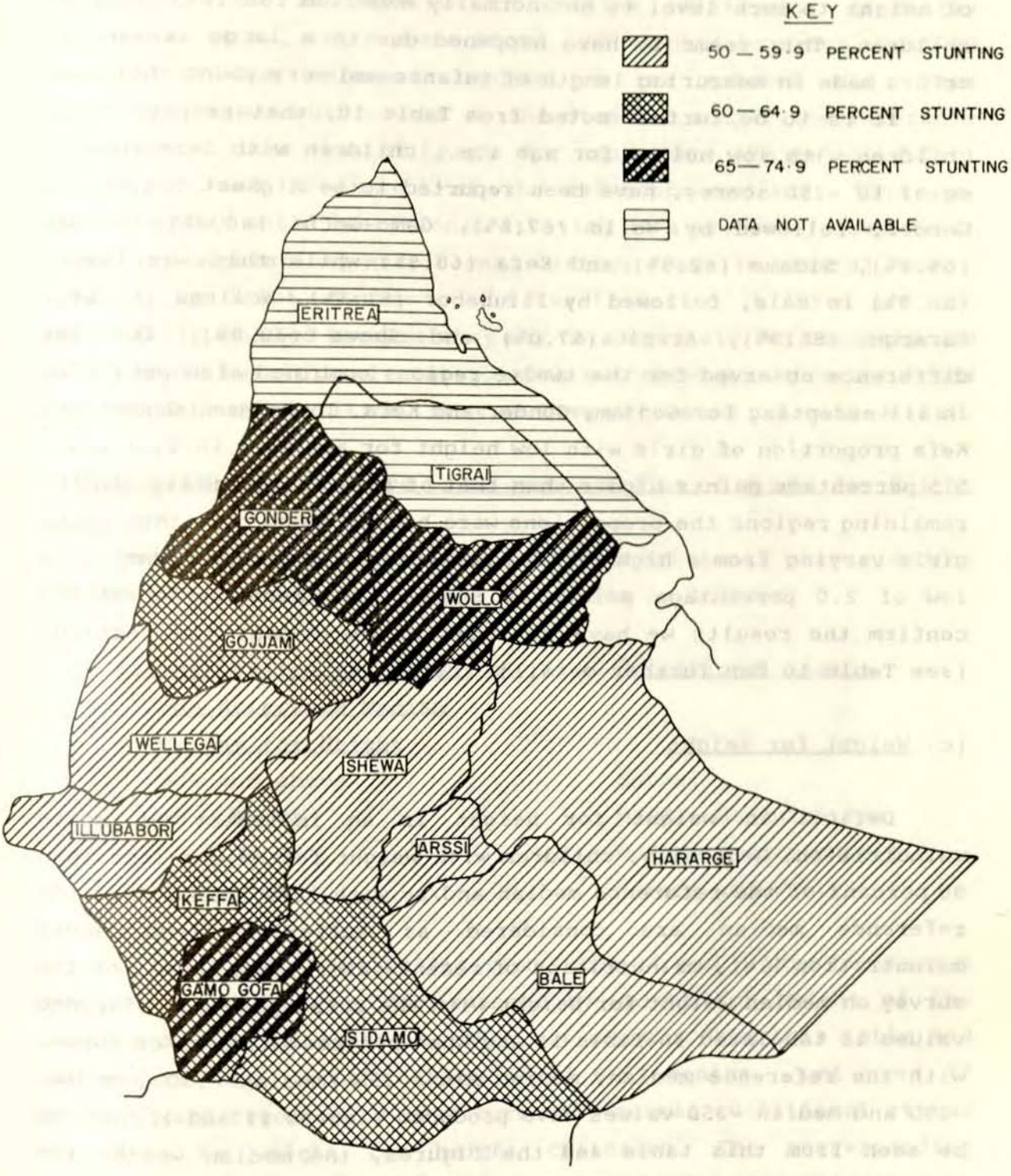


FIGURE 18 PREVALENCE OF STUNTING BY REGION



and 36-59 months, respectively. Nevertheless, the result for those aged under one year should be treated with caution, as retardation of height to such level is not normally expected for this group of children. This seems to have happened due to a large extent, to errors made in measuring length of infants and very young children.

It is to be further noted from Table 10, that proportion of children with low height for age i.e., children with less than or equal to -2SD scores, have been reported to be highest (74.0%) in Gonder, followed by Wello (67.5%), Gamo-Goffa (66.3%), Gojjam (64.9%), Sidamo (62.5%) and Kefa (60.9%) while this was lowest (50.9%) in Bale, followed by Illubabor (51.3%), Wellega (52.6%), Hararge (55.0%), Arssi (57.0%) and Shewa (60.0%). The sex difference observed for the twelve regions combined also persisted in all excepting for Gojjam, Gonder and Kefa. In Gojjam, Gonder and Kefa proportion of girls with low height for age were 10.2, 1.6 and 5.5 percentage points higher than that of boys respectively. In the remaining regions the proportions were higher among boys than among girls varying from a high of 10.2 percentage points in Sidamo to a low of 2.0 percentage points in Shewa. All these differentials confirm the results we have obtained in the former two sections (see Table 10 for further detail).

(c) Weight for Height

Deficit in weight for height is an indicator of acute malnutrition. Generally, children with weight for height less than 90 percent of the reference median and/or with less than-2SD of the reference median are considered as suffering from acute malnutrition i.e., malnutrition of recent origin. The result of the survey on median weight for height with the corresponding reference values is tabulated in Table 11 and when plotted in terms of curves with the reference median, median minus 1SD (median -1SD), median -2SD and median -3SD values have produced figures 11 and 12. As can be seen from this table and the figures, the median weight for height values for both males and females were well above the

reference median at the beginning and around the middle, i.e., among children with less than about 74 cm., and with about 81 to 86 cm., of height and started to decline relatively, gradually thereafter (i.e., after about 88 cm., of height) to reach about 80 percent of the reference median at the extreme end. This distribution was much closer to the standard and/or the reference distribution than that of height for age, where the majority fall between 85 and 90 percent of the reference median. This may indicate that while nutritional stunting is a problem in the rural sedentary population, nutritional wasting seems in general, not a problem, at least, during post-harvest. Wasted children are not necessarily stunted because they may be adequately fed recently and have normal nutritional status, with out necessarily being freed from chronic malnutrition. Next we have presented this in detail.

i-Observed Weight Relative to Reference Median of Weight for Height

This criterion classifies current nutritional status and/or degree of malnutrition in four categories as follows:

Classification as percent of The Reference Median Weight for Height	Nutritional Status
90% and above	Normal
80 - 89.9%	Mild-undernutrition
70 - 79.9%	Moderate-undernutrition
below 70%	Severe-undernutrition

Using the above classification Table 12 and Figure 13 present the nutritional status as assessed by weight for height of the rural sedentary children in 1983 . It appears from this table and the figure that among children aged 6-59 months, just over 77 percent were reported to have currently normal nutritional status according to weight for height criterion. The corresponding proportions for mild, moderate and severe acute-malnutrition were

about 17,4 and 2 percent , respectively. When broken by sex about 77, 18, 4 and 2 percent of boys and about 78, 17, 4, and 2 percent of girls were found to have normal, mild malnutrition, moderate malnutrition and severe acute malnutrition, respectively. Further, the nutritional status of children above 95 cm. height was worst of all groups, followed by those in 77-87 and 88-89 cm. height categories. For example, about 7 percent in 96 cm. and above category were either moderately or severely malnourished while this was about 6 percent each in 77-87 and 88-89 cm. height categories and about 4 percent in 55-76 cm. height category. Thus the problem of acute malnutrition or wasting among rural sedentary population appears to be much less than chronic malnutrition or stunting, at least in the period of post-harvest.

Among the regions covered by the survey, proportion of children with either normal or only mild acute-malnutrition were recorded highest in Bale (97%), followed by Arssi (96.5%), Gamo-Goffa (96%) and Sidamo (96%), while those with either moderately acute-malnutrition or with severely acute-malnutrition problem were recorded highest in Hararge (10%), followed by Illubabor (9%), Wello (8.1%) and wellega (7%). See Table 12 for further detail.

ii- Decile of Weight for Height

Weight for height data of an individual child by sex -all ages combined, have been used to place the child in the appropriate decile bracket of the reference population weight for height decile distribution in order to present a more complete picture of the difference between the sampled and the reference population. The result has been compiled and/or summarized in Table 13 and Figure 14. It can be seen that, unlike the situation in weight for age (indicator of nutritional status in general, i.e., indicator of both acute and chronic malnutrition, combined) and in height for age (indicator of chronic-malnutrition), where we have the bulk of the malnutrition problem clustered within the first decile bracket,

the corresponding values were about 19, 11, 10, 8, 7 and 9 percent in the first, second, third, fourth, fifth and sixth decile brackets in the case of weight for height. In fact, about 56 percent of children were classified within the first-five decile brackets and the remaining 45 percent within the sixth and the above decile brackets. This distribution also persisted in each region and all confirm the findings in the in the preceding section.

iii) SD-Scores of Weight for Height

The preceding findings on weight for height are analyzed next using the standard deviation (SD-score) distribution around the median of the reference population. SD-scores of weight for height nutritional indicators are given using the following formulae

$$\text{Weight for height SD score} = \frac{\text{Child's Weight} - \text{Reference Median; same Height \& Sex}}{\text{SD of Reference; same Height Sex}}$$

The computed values of weight for height for height SD-scores are summarized in Tables 14 and 15 and are depicted graphically in Figure 15. Taking SD-scores of -2 as a cut off point for having low weight for height, the proportion of children aged 6-59 months with low weight for height were just over eight percent. This means, about eight percent of the children were having low weight for height as a result of acute malnutrition in 1983. By sex, this was about 9 percent for boys and nearly 8 percent for girls. Taken by itself, this is not a small proportion. Nevertheless, when this is compared to that of height for age results (i.e., where about 60 percent of children were with low height for age as a result of past chronic malnutrition) the finding of 8 percent with low weight for height would definitely suggest better current nutritional status.

Table 11 - Median Weight for Height of Children Aged 6-59 Months, as Compared to the Standards Developed by the United States National Center for Health Statistics by Sex and Age in Single Months, (all Regions Combined)

Height in Cms.	Boys				Girls			
	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median
58	26	7.1	5.1	139.2	30	7.1	5.0	142.0
59	27	6.5	5.4	120.4	32	6.8	5.3	128.3
60	40	8.1	5.7	142.1	54	6.8	5.5	123.6
61	42	7.1	5.9	120.3	60	6.8	5.8	117.2
62	65	7.2	6.2	116.1	53	6.8	6.1	111
63	71	7.2	6.5	110.8	74	6.8	6.4	106.3
64	84	7.0	6.8	102.9	73	6.9	6.7	103.0
65	100	8.0	7.1	112.7	91	7.3	7.0	104.3
66	99	8.1	7.4	109.5	65	8.1	7.3	111.0
67	81	8.5	7.7	110.4	100	8.3	7.5	110.7
68	107	8.6	8.0	107.5	106	8.4	7.8	107.7
69	94	9.0	8.3	108.4	86	9.2	8.1	113.6
70	106	9.2	8.5	108.2	124	8.9	8.4	106.0
71	86	9.4	8.8	106.8	93	9.1	8.6	105.8
72	99	9.4	9.1	103.3	125	9.4	8.9	105.6
73	97	9.6	9.3	103.2	109	9.3	9.1	102.2
74	101	9.6	9.6	100.0	115	9.3	9.4	98.9
75	147	9.7	9.8	99.0	136	9.9	9.6	103.1
76	114	9.8	10.0	98.0	127	9.7	9.8	99.0
58 - 76	1,683	8.8			1,812	8.6		
77	121	9.5	10.3	92.2	122	9.7	10.0	97.0
78	125	10.3	10.5	98.1	140	10.1	10.2	99.0
79	102	10.5	10.7	98.1	112	10.0	10.4	96.2
80	130	10.8	10.9	99.1	137	10.3	10.6	97.2
81	114	11.4	11.1	102.7	110	10.6	10.8	98.1
82	132	11.4	11.3	100.9	120	11.1	11.0	100.9
83	125	12.0	11.5	104.3	142	11.3	11.2	100.9
84	115	11.7	11.7	100.0	124	11.8	11.4	103.5
85	164	12.2	11.9	102.5	123	11.9	11.8	100.8
86	125	12.4	12.1	102.5	117	12.1	12.0	100.8
87	140	12.3	12.3	100.0	131	12.4	12.3	100.8
77 - 87	1,393	11.5			1,378	11.1		
88	142	12.6	12.8	98.4	134	12.3	12.5	98.4
89	106	12.9	13.0	99.2	102	12.5	12.7	98.4
90	126	13.0	13.3	97.7	120	12.6	12.9	97.7
91	120	12.7	13.5	94.1	103	12.8	13.2	99.0
92	129	13.1	13.7	95.6	109	12.8	13.4	95.5
93	108	13.2	14.0	94.3	73	13.3	13.6	97.8
94	115	13.4	14.2	94.4	99	13.1	14.9	94.2
95	108	13.7	14.5	94.5	101	13.4	14.1	95.0
88 - 95	1,050	13.1			919	12.8		
96	96	14.4	14.7	98.0	78	13.5	14.3	94.4
97	88	14.9	15.0	99.3	88	14.2	14.6	97.3
98	92	14.8	15.2	97.4	93	14.7	14.9	98.7
99	54	15.6	15.5	100.6	57	14.9	15.1	98.7
100	75	15.7	15.7	100.0	70	15.3	15.4	99.4
101	43	15.7	16.0	98.1	32	15.0	15.6	96.2

Table 11 (contd.)

Height in Cms.	Boys				Girls			
	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median	Number of Cases	Observed Median	Reference Median	Observed as % of Reference Median
102	53	15.7	16.3	96.3	39	15.1	15.9	95.0
103	47	15.7	16.6	94.6	34	15.9	16.2	98.1
104	33	15.8	16.9	93.5	26	15.6	16.5	94.5
105	37	15.6	17.1	91.2	18	15.6	16.7	93.4
106	18	15.7	17.4	90.2	14	16.0	17.0	94.1
107	14	16.0	17.7	90.4	14	15.8	17.3	91.3
108	15	16.0	18.0	88.9	11	16.0	17.6	90.9
109	15	13.6	18.3	85.2	10	16.0	17.9	89.4
110	40	15.6	18.7	83.4	25	15.4	18.2	84.6
111	1	16.0	19.0	84.2	2	16.0	18.6	86.0
112	1	16.0	19.3	82.9	3	16.0	18.9	84.7
113	1	12.4	19.6	63.3	1	16.0	19.2	83.3
114	3	14.9	20.0	74.5	3	14.9	19.5	76.4
115	3	16.0	20.3	78.8	2	16.0	19.9	80.4

Table 12 Percentage Distribution of Degree of Protein-Energy Malnutrition (PEM) according to Weight for Height Percent Median Classification, for Children Aged 6-59 Months by Height (in Cm.) SEx and Region.

Region & Height (in Cm.)	Male				Female				Both Sexes			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	MiId PEM	Moderate PEM	Severe PEM
All Region												
55 - 76	83.9	12.1	2.6	1.4	82.7	13.0	3.3	1.0	83.3	12.5	3.0	1.2
77 - 87	74.6	19.7	3.9	1.8	74.1	19.3	3.9	2.7	74.3	19.5	3.9	2.2
88 - 95	73.5	20.5	4.3	1.7	79.1	15.5	3.6	1.8	76.1	18.2	3.9	1.7
⩾ 96	69.9	23.1	4.0	3.0	68.5	23.8	5.4	2.2	69.3	23.4	4.6	2.7
⩾ 55	77.0	17.7	3.5	1.8	77.6	16.8	3.8	1.8	77.3	17.2	3.7	1.8
Arssi												
55 - 76	86.2	8.3	2.8	2.8	90.4	2.9	2.9	3.8	88.3	5.7	2.8	3.2
77 - 87	86.7	10.8	0.8	1.7	79.5	15.6	4.1	0.8	83.1	13.2	2.5	1.2
88 - 95	93.1	5.7	0.0	1.1	95.2	3.6	0.0	1.2	94.2	4.7	0.0	1.2
⩾ 96	86.4	12.3	0.0	1.2	90.0	8.8	1.3	0.0	88.2	10.6	0.6	0.6
⩾ 55	87.8	9.2	1.2	1.8	88.2	7.8	2.4	1.3	88.0	8.5	1.8	1.8
Bale												
55 - 76	88.9	9.4	0.9	0.9	89.4	8.9	1.6	0.0	89.2	9.2	1.3	0.4
77 - 87	84.5	10.7	3.6	1.2	83.3	11.1	4.4	1.1	83.9	10.9	4.0	1.1
88 - 95	89.6	7.8	2.6	0.0	93.0	7.0	0.0	0.0	91.0	7.5	1.5	0.0
⩾ 96	75.3	22.2	2.5	0.0	83.3	13.0	0.0	3.7	78.5	18.5	1.5	1.5
⩾ 55	85.0	12.3	2.2	0.6	87.3	9.9	1.9	0.9	86.1	11.1	2.1	0.7
Gamo Gofa												
55 - 76	91.0	6.8	1.5	0.8	88.5	9.0	1.6	0.8	89.8	7.8	1.6	0.8
77 - 87	81.6	13.8	3.4	1.1	85.2	10.2	3.4	1.1	83.4	12.0	3.4	1.1
88 - 95	84.2	14.0	0.0	1.8	80.0	13.3	5.0	1.7	82.1	13.7	2.6	1.7
⩾ 96	74.2	19.4	6.5	0.0	80.0	16.0	0.0	4.0	76.8	17.9	3.6	1.8
⩾ 55	85.2	11.4	2.3	1.0	85.1	10.8	2.7	1.4	85.2	11.1	2.5	1.2
Gojjam												
55 - 76	75.8	16.9	5.6	1.6	78.1	18.7	2.6	0.6	77.1	17.9	3.9	1.1
77 - 87	70.2	23.1	5.8	1.0	71.7	24.2	3.3	0.8	71.0	23.7	4.5	0.9
88 - 95	64.9	29.9	5.2	0.0	69.1	23.5	7.4	0.0	66.9	26.9	6.2	0.0
⩾ 96	73.2	19.6	3.6	3.6	75.0	20.5	4.5	0.0	74.0	20.0	4.0	2.0
⩾ 55	71.5	21.9	5.3	1.4	74.2	21.4	3.9	0.5	72.9	21.7	4.5	0.9

Table 12 (contd.)

Region & Height (in Cm.)	Male				Female				Both Sexex			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
Gonder												
55 - 76	77.6	18.2	3.6	0.6	74.9	19.2	5.4	0.6	76.2	18.7	4.5	0.6
77 - 87	72.4	23.6	3.1	0.8	72.9	20.0	1.2	5.9	72.6	22.2	2.4	2.8
88 - 95	75.7	20.0	2.9	1.4	73.0	23.8	1.6	1.6	74.4	21.8	2.3	1.5
≥ 96	67.4	25.6	2.3	4.7	75.0	20.8	4.2	0.2	70.1	23.9	3.0	3.0
≥ 55	74.6	21.0	3.2	1.2	74.0	20.4	3.5	2.1	74.3	20.7	3.4	1.6
Hararge												
55 - 76	83.9	10.2	2.5	3.4	76.6	21.6	0.0	0.9	80.8	15.8	1.3	2.1
77 - 87	73.3	14.9	3.0	8.9	59.5	21.5	6.6	12.4	65.8	18.5	5.0	10.8
88 - 95	77.0	18.0	4.9	0.0	78.0	16.0	4.0	2.0	77.5	17.1	4.5	0.9
≥ 96	59.6	23.1	11.5	5.8	44.4	39.7	15.9	0.0	51.3	32.2	13.9	2.6
≥ 55	75.6	15.1	4.5	4.8	65.4	24.0	5.7	4.9	70.4	19.7	5.1	4.8
Illubabor												
55 - 76	81.0	15.2	2.9	1.0	75.7	16.5	4.9	2.9	78.4	15.9	3.8	1.9
77 - 87	61.8	26.3	9.2	2.6	58.3	29.8	8.3	3.6	60.0	28.1	8.8	3.1
88 - 95	58.2	28.4	11.9	1.5	72.0	24.0	2.0	2.0	64.1	26.5	7.7	1.7
≥ 96	69.4	20.4	4.1	6.1	57.9	29.8	7.0	5.3	63.2	25.5	5.7	5.7
≥ 55	69.0	21.9	6.7	2.4	66.7	24.1	5.8	3.4	67.8	23.0	6.3	2.9
Kefa												
55 - 76	85.8	11.5	0.9	1.8	80.7	15.6	2.2	1.5	83.1	13.7	1.6	1.6
77 - 87	66.3	27.4	5.3	1.1	78.3	20.7	0.0	1.1	72.2	24.1	1.7	1.1
88 - 95	62.5	28.1	0.0	9.4	84.2	13.2	0.0	2.6	70.6	22.5	0.0	6.9
≥ 96	64.6	25.0	8.3	2.1	69.7	24.2	6.1	0.0	66.7	24.7	7.4	1.2
≥ 55	72.2	21.6	3.1	3.1	79.2	17.8	1.7	1.3	75.6	19.7	2.4	2.3
Shewa												
55 - 76	89.9	7.0	1.7	1.4	90.4	7.2	1.8	0.6	90.2	7.1	1.8	1.0
77 - 87	78.9	17.0	2.4	1.6	79.4	16.3	3.8	0.8	79.0	16.7	3.1	1.2
88 - 95	76.7	17.2	5.0	1.1	80.1	14.9	2.5	2.5	78.3	16.1	3.8	1.8
≥ 96	64.8	24.2	3.9	7.0	71.0	23.0	3.0	3.0	67.5	23.7	3.5	5.3
≥ 55	80.0	14.7	3.0	2.3	82.8	13.3	2.7	1.3	81.4	14.0	2.8	1.8

Table 12 (contd.)

Region & Height (in Cm.,)	Male				Female				Both Sexes			
	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM	Normal	Mild PEM	Moderate PEM	Severe PEM
Sidamo												
55 - 76	88.3	9.9	0.9	0.9	86.6	10.7	2.7	0.0	87.4	10.3	1.8	0.4
77 - 87	83.2	13.9	1.0	2.0	80.4	14.7	2.9	2.0	81.8	14.3	2.0	1.0
88 - 95	75.9	17.2	3.4	3.4	85.7	8.9	5.4	0.0	80.7	13.2	4.4	1.8
≥ 96	82.8	17.2	0.0	0.0	71.4	17.9	7.1	3.6	77.2	17.5	3.5	1.8
≥ 55	83.6	13.4	1.3	1.7	82.9	12.4	3.7	1.0	83.2	12.9	2.5	1.3
Wellega												
55 - 76	74.8	20.1	3.8	1.3	72.5	20.9	5.5	1.1	73.6	20.5	4.7	1.2
77 - 87	64.0	29.8	5.6	0.6	66.9	26.5	5.1	1.5	65.3	28.3	5.4	1.0
88 - 95	55.3	35.1	7.9	1.8	64.1	24.8	7.7	3.4	59.7	29.9	7.8	2.6
≥ 96	58.2	35.7	5.1	1.0	54.8	39.3	3.6	2.4	56.6	37.4	4.4	1.6
≥ 55	64.3	29.1	5.5	1.1	66.3	26.2	5.6	1.9	65.3	27.7	5.5	1.5
Wello												
55 - 76	79.3	15.3	3.6	1.8	79.7	9.4	7.8	3.1	79.5	12.1	5.9	2.5
77 - 87	70.5	21.8	7.7	0.0	69.2	24.4	2.6	3.8	69.9	23.1	5.1	1.9
88 - 95	69.0	26.2	4.8	0.0	87.5	5.0	5.0	2.5	78.0	15.9	4.9	1.2
≥ 96	77.8	22.2	0.0	0.0	58.8	17.6	17.6	5.9	68.6	20.0	8.6	2.9
≥ 55	74.9	19.9	4.5	0.7	75.4	13.9	7.1	3.6	75.1	16.8	5.9	2.2

Table 13- Centile Distribution of Weight for Height of Children Aged 6-59 Months by Sex and Region.

Region & Sex	Centile													No. of Cases in the Sample
	0-2	3-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	Total	
All Region														
Male	10.1	3.1	6.9	11.0	10.4	7.6	7.7	8.6	7.4	6.9	6.1	14.1	100	4,772
Female	8.8	3.2	6.0	11.0	9.2	9.0	6.8	8.8	7.1	7.0	7.2	15.8	100	4,665
B.Sexes	9.4	3.2	6.5	11.0	9.8	8.3	7.3	8.7	7.3	7.0	6.6	15.0	100	9,437
Arssi														
Male	3.7	1.2	5.8	6.2	9.2	6.0	9.9	9.9	11.8	12.2	10.2	13.9	100	433
Female	4.5	1.7	2.8	6.4	8.8	11.4	9.2	10.0	10.4	9.5	10.2	15.2	100	422
B.Sexes	4.1	1.4	4.3	6.3	9.0	8.7	9.6	9.9	11.1	10.9	10.2	14.5	100	855
Bale														
Male	6.7	3.1	3.3	10.0	8.9	9.7	7.5	9.7	9.5	8.4	7.2	15.9	100	[illegible]
Female	4.0	2.2	4.0	9.0	9.9	9.3	4.0	13.9	8.0	8.0	9.3	18.5	100	324
B.Sexes	5.4	2.6	3.7	9.5	9.4	9.5	5.9	11.7	8.8	8.2	8.2	17.1	100	683
Gamo-Gofa														
Male	7.8	1.3	4.2	9.1	9.7	5.8	8.1	13.0	9.4	5.5	7.1	18.8	100	308
Female	5.8	1.7	4.1	8.1	8.5	7.1	5.1	8.8	8.8	9.2	8.8	24.1	100	295
B.Sexes	6.8	1.5	4.1	8.6	9.1	6.5	6.6	10.9	9.1	7.3	8.0	21.4	100	603
Gojjam														
Male	12.5	4.2	8.0	10.2	11.9	8.6	8.9	10.5	6.9	5.5	3.6	9.1	100	361
Female	7.5	2.1	9.0	15.0	10.3	9.0	8.0	8.5	5.9	7.2	6.2	11.1	100	387
B.Sexes	9.9	3.1	8.6	12.7	11.1	8.8	8.4	9.5	6.4	6.4	4.9	10.2	100	748
Gonder														
Male	8.4	5.2	7.9	13.1	12.6	8.1	7.2	7.2	8.9	7.4	4.9	9.1	100	405
Female	9.7	4.1	5.9	12.7	10.0	11.2	7.1	7.4	8.8	6.5	6.5	10.0	100	339
B.Sexes	9.0	4.7	7.0	12.9	11.4	9.5	7.1	7.3	8.9	7.0	5.6	9.5	100	744
Hararge														
Male	16.3	1.5	4.5	6.6	6.6	9.3	5.7	10.2	5.7	8.4	6.3	18.7	100	332
Female	15.4	4.9	8.3	11.7	6.3	7.7	5.7	6.6	7.7	5.7	5.1	14.9	100	350
B.Sexes	15.8	3.2	6.5	9.2	6.5	8.5	5.7	8.4	6.7	7.0	5.7	16.7	100	682
Illubabor														
Male	13.1	4.0	11.4	10.1	10.8	6.4	9.4	7.7	4.0	4.7	7.1	11.1	100	297
Female	12.9	4.4	9.2	11.6	9.2	6.5	4.8	5.8	6.8	6.8	7.8	14.3	100	294
B.Sexes	13.0	4.2	10.3	10.8	10.0	6.4	7.1	6.8	5.4	5.8	7.4	12.7	100	591
Kefa														
Male	14.7	2.5	8.1	12.2	8.8	10.6	7.5	5.3	5.3	5.6	5.3	14.1	100	320
Female	5.4	5.4	4.0	10.4	8.4	10.1	7.0	7.4	7.4	8.1	8.7	17.8	100	298
B.Sexes	10.2	3.9	6.1	11.3	8.6	10.4	7.3	6.3	6.3	6.8	7.0	15.9	100	618
Shewa														
Male	9.4	2.3	6.3	10.6	10.6	6.7	7.2	8.6	7.4	5.5	5.9	19.7	100	842
Female	8.1	2.7	4.4	9.2	7.6	8.4	6.1	10.6	6.2	6.6	7.9	22.2	100	859
B.Sexes	8.8	2.5	5.3	9.9	9.1	7.5	6.6	9.6	6.8	6.1	6.9	21.0	100	1,701
Sidamo														
Male	6.4	2.7	3.3	11.7	10.7	6.4	7.4	9.4	9.7	9.0	6.7	16.7	100	299
Female	6.7	2.3	4.0	11.1	10.1	6.7	8.4	10.4	10.4	8.1	7.0	14.8	100	298
B.Sexes	6.5	2.5	3.7	11.4	10.4	6.5	7.9	9.9	10.1	8.5	6.9	15.7	100	597
Wellega														
Male	12.8	5.3	10.7	19.3	12.9	8.4	6.6	6.2	4.4	4.2	4.2	5.1	100	549
Female	12.1	5.4	9.8	15.2	13.3	11.6	6.7	7.1	3.7	4.0	3.9	7.1	100	519
B.Sexes	12.5	5.3	10.3	17.3	13.1	9.9	6.6	6.6	4.0	4.1	4.0	6.1	100	1,068
Wello														
Male	11.2	3.7	8.6	9.4	10.1	5.2	8.2	7.1	5.2	8.6	5.2	17.2	100	267
Female	13.2	2.1	6.4	11.8	8.9	7.9	10.4	7.1	4.3	6.8	4.6	16.4	100	280
B.Sexes	12.2	2.9	7.5	10.6	9.5	6.6	9.3	7.1	4.8	7.7	4.9	16.8	100	547

Table 14 Percentage Distribution of Weight for Height SD-Scores by Sex and Age-Group (in Months) (all Regions Combined)

Sex / Age Group (in months)	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to 0.00	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the Sample
Male														
6 - 11	1.4	1.2	0.9	3.3	8.6	19.3	23.8	19.0	7.4	5.2	2.4	7.4	100	579
12 - 23	0.9	0.7	1.7	6.8	16.9	22.0	22.4	12.9	6.2	3.2	1.6	4.8	100	1,008
24 - 35	2.8	0.7	1.7	6.0	20.6	32.0	27.6	6.4	1.5	0.6	2.8	4.7	100	1,069
36 - 59	1.4	0.3	0.9	5.3	19.6	36.8	25.0	6.7	2.5	0.9	0.2	0.4	100	2,116
6 - 59	1.6	0.5	1.3	5.6	17.9	30.5	24.9	9.4	3.6	1.8	0.8	2.2	100	4,772
Female														
6 - 11	0.8	0.8	1.5	2.4	7.1	14.3	24.6	16.7	11.1	5.6	4.1	10.9	100	532
12 - 23	1.0	0.6	1.2	5.4	16.2	24.7	23.6	11.7	5.7	3.1	2.5	4.2	100	1,047
24 - 35	2.2	0.4	1.2	4.5	18.8	34.4	27.2	6.4	2.2	1.0	0.3	1.5	100	1,101
36 - 59	1.4	0.5	1.0	4.9	19.8	32.9	26.9	8.4	2.4	1.1	0.4	0.4	100	1,985
6 - 59	1.4	0.5	1.2	4.7	17.3	29.3	26.0	9.6	4.1	2.0	1.3	2.7	100	4,665
Both Sexes														
6 - 11	1.1	1.0	1.2	2.9	7.9	16.9	24.2	17.9	9.2	5.4	3.2	9.1	100	1,111
12 - 23	0.9	0.6	1.5	6.1	16.6	23.4	23.0	12.3	5.9	3.1	2.0	4.5	100	2,055
24 - 35	2.5	0.4	1.4	5.3	19.7	33.2	27.4	6.4	1.8	0.8	0.2	1.0	100	2,170
36 - 59	1.4	0.4	1.0	5.1	19.7	34.9	25.9	7.5	2.4	1.0	0.3	0.4	100.	4,101
6 - 59	1.5	0.5	1.2	5.1	17.6	29.9	25.4	9.5	3.9	1.9	1.0	2.5	100	9,437

Table 15-Percentage Distribution of Weight for Height SD-Scores by Sex and Region.

Region and Sex	SD - Scores													
	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.0	+0.01 to +1.00	+1.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	No. of Cases in the Sample
All Regions														
Male	1.6	0.5	1.3	5.6	17.9	30.5	24.9	9.4	3.6	1.8	0.8	2.2	100	4,772
Female	1.4	0.5	1.2	4.7	17.3	29.3	26.0	9.6	4.1	2.0	1.3	2.7	100	4,665
B.Sexes	1.5	0.5	1.2	5.1	17.6	29.9	25.4	9.5	3.8	1.9	1.0	2.5	100	9,437
Arssi														
Male	0.0	0.5	0.9	1.8	10.2	28.9	38.1	13.4	3.0	2.1	0.2	0.9	100	433
Female	0.5	0.5	0.5	2.8	8.5	32.5	34.4	13.3	4.3	0.7	0.5	1.7	100	422
B.Sexes	0.2	0.5	0.7	2.3	9.4	30.6	36.3	13.3	3.6	1.4	0.4	1.3	100	855
Bale														
Male	0.8	0.3	0.8	3.1	13.1	31.2	30.9	10.3	4.5	1.7	0.6	2.8	100	359
Female	0.9	0.3	0.0	2.8	11.1	27.8	34.9	10.5	5.9	2.8	0.0	3.1	100	324
B.Sexes	0.9	0.3	0.4	2.9	12.2	29.6	32.8	10.4	5.1	2.2	0.3	2.9	100	683
Gamo-Gofa														
Male	1.6	0.0	0.6	4.9	11.0	27.9	31.8	10.7	5.5	2.6	1.0	2.9	100	308
Female	0.7	0.7	0.3	3.4	12.5	23.7	30.5	12.5	7.5	1.7	1.7	4.7	100	295
B.Sexes	1.2	0.3	0.5	4.1	11.8	25.9	30.8	11.6	6.5	2.2	1.3	3.8	100	603
Gojjam														
Male	0.8	0.0	1.4	8.9	21.1	33.0	23.8	6.6	1.1	1.9	0.0	1.4	100	361
Female	0.3	0.0	1.0	5.2	21.7	32.8	24.0	7.2	3.1	1.8	1.8	1.0	100	387
B.Sexes	0.5	0.0	1.2	7.0	21.4	32.9	23.9	7.0	2.1	1.9	0.9	1.2	100	748
Gonder														
Male	0.7	0.2	1.2	4.9	22.0	34.1	25.4	6.4	1.0	1.2	1.0	1.7	100	405
Female	2.1	0.6	0.6	4.7	19.2	33.6	26.3	5.0	2.4	2.1	0.6	2.9	100	339
B.Sexes	1.3	0.4	0.9	4.8	20.7	33.9	25.8	5.8	1.6	1.6	0.8	2.3	100	744
Hararge														
Male	3.6	1.2	1.5	8.4	11.7	24.4	25.6	11.1	5.7	2.4	0.9	3.3	100	332
Female	3.1	0.9	2.0	8.9	21.7	23.4	21.1	8.6	2.9	1.7	1.4	4.3	100	350
B.Sexes	3.4	1.0	1.8	8.7	16,9	23.9	23.3	9.8	4.3	2.1	1.2	3.8	100	682
Illubabor														
Male	2.0	1.0	2.7	5.7	23.6	30.6	18.2	7.7	4.4	1.3	0.3	2.4	100	297
Female	1.0	1.0	3.1	6.5	24.1	22.8	22.1	12.6	3.4	1.4	0.7	1.4	100	294
B.Sexes	1.5	1.0	2.9	6.1	23.9	26.7	20.1	10.2	3.9	1.4	0.5	1.9	100	591

Table 15 (contd.)

Region and Sex	SD - SCORES													No. of Cases in the Sample
	-5 or below	-4.99 to -4.00	-3.99 to -3.00	-2.99 to -2.00	-1.99 to -1.00	-0.99 to -0.00	+0.01 to +1.00	+0.01 to +2.00	+2.01 to +3.00	+3.01 to +4.00	+4.01 to +5.00	Above +5.00	Total	
Kefa														
Male	2.5	1.3	1.9	6.6	21.3	30.9	18.8	9.4	2.8	3.1	0.9	0.6	100	320
Female	0.7	0.0	1.3	2.0	18.5	28.2	28.5	10.4	4.7	2.7	0.7	2.3	100	298
B.Sexes	1.6	0.6	1.6	4.4	19.9	29.6	23.5	9.9	3.7	2.9	0.8	1.5	100	618
Shewa														
Male	2.5	0.5	1.5	3.9	15.4	29.6	23.2	10.5	5.5	2.0	1.1	4.4	100	842
Female	2.4	0.3	1.0	3.3	14.0	26.0	25.8	12.0	5.5	3.0	1.7	4.9	100	859
B.Sexes	2.5	0.4	1.3	3.6	14.7	27.7	24.5	11.2	5.5	2.5	1.4	4.6	100	1,701
Sidamo														
Male	1.0	0.7	0.7	3.3	13.7	19.4	29.8	12.0	5.0	2.0	0.3	2.0	100	299
Female	0.3	0.3	0.7	4.7	13.8	29.9	31.9	10.4	3.0	2.0	2.3	0.7	100	298
B.Sexes	0.7	0.5	0.7	4.0	13.7	29.6	30.8	11.2	4.0	2.0	1.3	1.3	100	597
Wellega														
Male	1.1	0.4	0.4	10.0	29.7	35.0	15.5	6.9	0.5	0.0	0.4	0.2	100	549
Female	1.0	0.6	1.9	6.7	27.0	37.0	16.6	4.8	1.9	0.4	1.0	1.2	100	519
B.Sexes	1.0	0.5	1.1	8.4	28.4	36.0	16.0	5.9	1.2	0.2	0.7	0.7	100	1,068
Wello														
Male	2.2	0.4	1.9	5.6	19.9	27.7	21.7	7.5	5.2	2.6	2.6	2.6	100	267
Female	2.1	1.4	1.4	6.4	16.8	32.9	19.3	6.8	3.9	4.3	2.5	2.1	100	280
B.Sexes	2.2	0.9	1.6	6.0	18.3	30.3	20.5	7.1	4.6	3.5	2.6	2.4	100	547

Figure 6-OBSERVED AND REFERENCE POPULATION MEDIAN HEIGHT FOR AGE (IN MONTHS) FOR MALE CHILDREN AGED 6-59 MONTHS, RURAL 1983

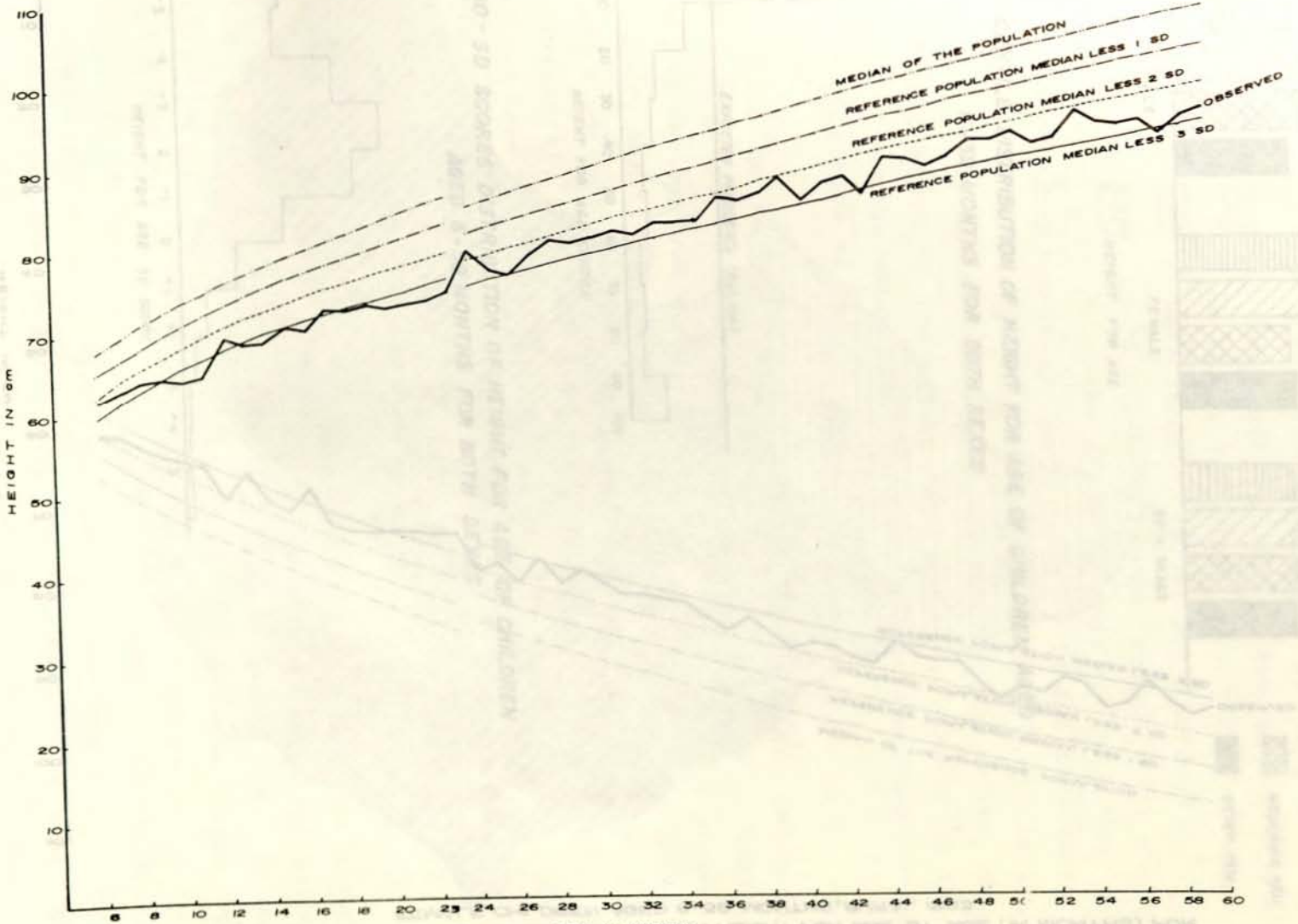


Figure 7- OBSERVED AND REFERENCE POPULATION MEDIAN HEIGHT FOR AGE BY AGE (IN MONTHS) FOR FEMALE CHILDREN AGED 6-59 MONTHS, RURAL 1983

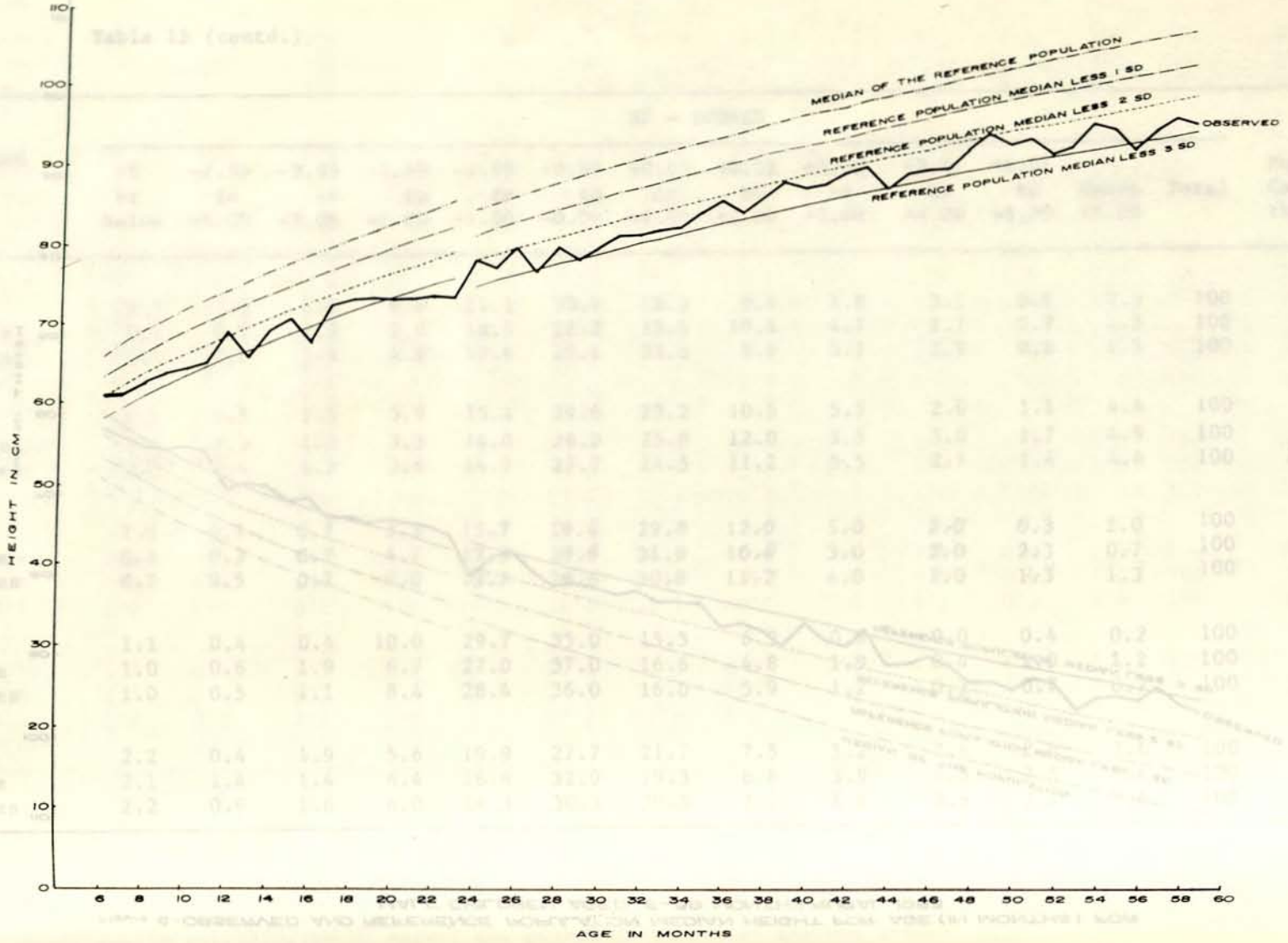


Figure. 8-PERCENTAGE DISTRIBUTION OF NUTRITIONAL STATUS OF CHILDREN AGED 6-59 MONTHS ACCORDING TO HEIGHT FOR AGE INDICATOR

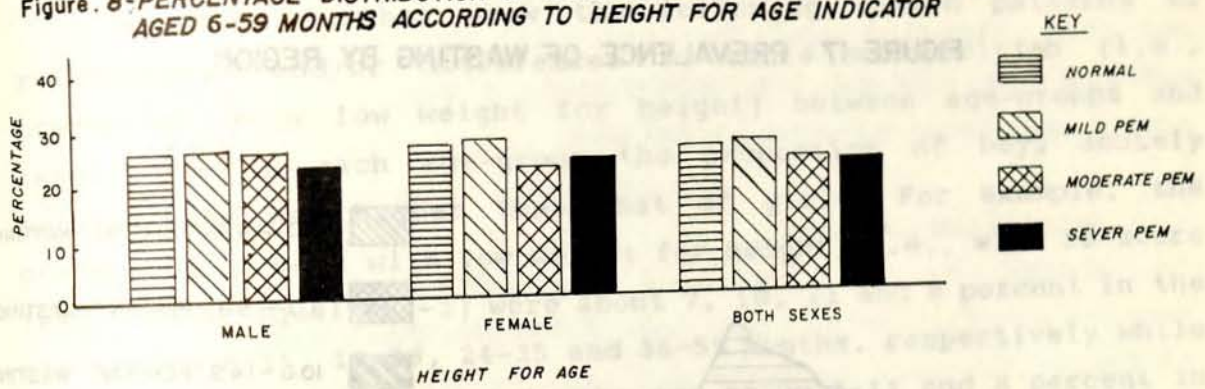


Figure .9 - CENTILE DISTRIBUTION OF HEIGHT FOR AGE OF CHILDREN AGED 6-59 MONTHS FOR BOTH SEXES

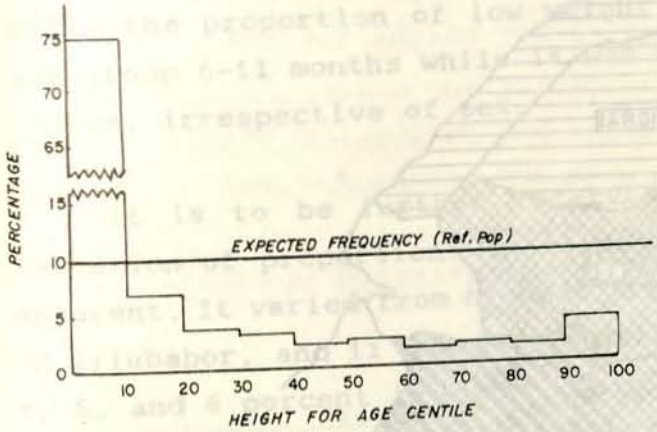


Figure 10 - SD SCORES DISTRIBUTION OF HEIGHT FOR AGE OF CHILDREN AGED 6-59 MONTHS FOR BOTH SEXES

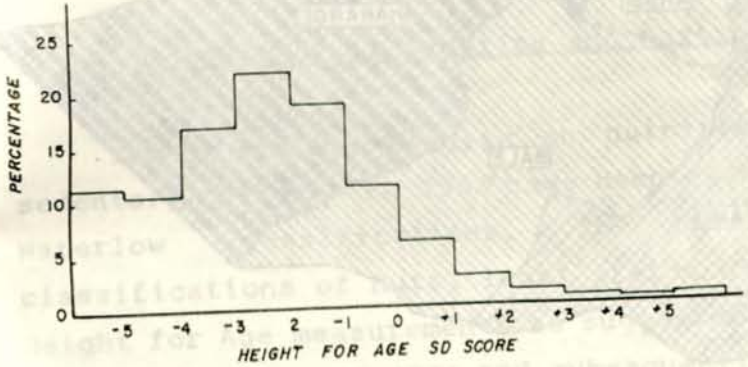
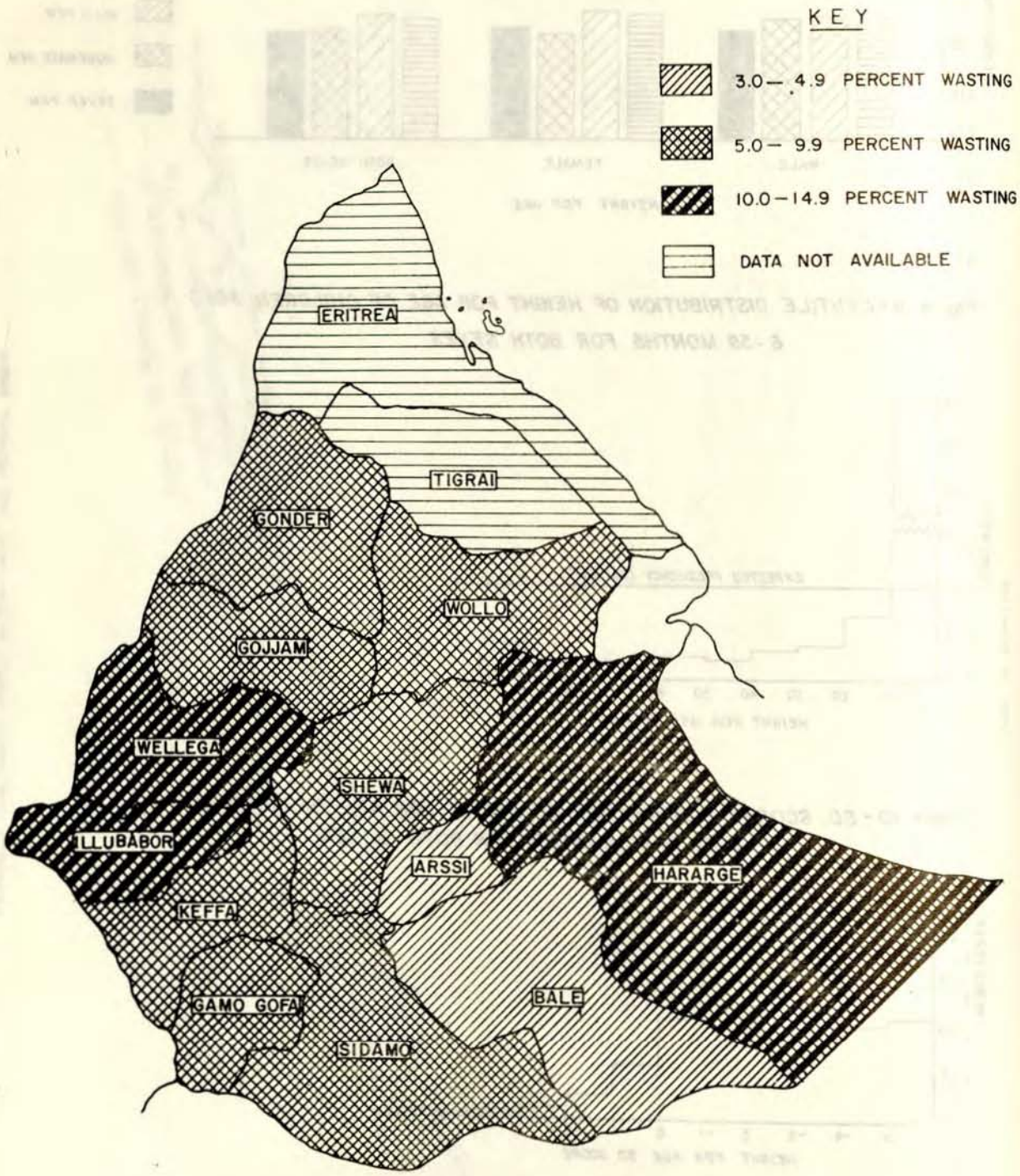


FIGURE 17 PREVALENCE OF WASTING BY REGION



The data further show the following common patterns of relationship and/or differences in acute malnutrition (i.e., proportion with low weight for height) between age-groups and sexes; (i) in each age-group the proportion of boys acutely malnourished was higher than that of girls. For example, the proportion of boys with low weight for height (i.e., with SD-score less than or equal to -2) were about 7, 10, 11 and 8 percent in the age-groups 6-11, 12-23, 24-35 and 36-59 months, respectively while these were about 6 percent in the age-group 6-11 and 8 percent in each of the remaining age-group, among girls, (ii) for both sexes, the proportions of low weight for height were increasing up to the age-group of 24-35 months and started decreasing thereafter, and (iii) the proportion of low weight for height was lowest in the age-group 6-11 months while it was highest in the age-group 24-35 months, irrespective of sex.

It is to be further observed from Table 15 that regional variation of proportions in being underweight were rather highly apparent. It varied from highest: 15 percent in Hararge, 12 percent in Illubabor, and 11 percent in Wellega and Wello, each, to lowest 4, 5, and 6 percent in Arssi, Bale and Sidamo , respectively. The sex differential, though small, also persisted in the majority of the regions (see Table 15). All this result has further ascertained the result in the preceding two sections.

4.3 A Closer Look at Stunting and Wasting

The preceding results on nutritional status of the rural sedentary children in 1983 have been examined and summarized using Waterlow classifications. In this section four broad classifications of nutritional status using Weight for Height and Height for Age measurements as suggested by Waterlow (Waterlow et. al, 1977,55(4): 489-498) and subsequently recommended by the World Health Organization (WHO) have been used. These four nutritional Status categories are (i) normal nutritional status, (ii) Wasting:

only acute malnutrition (iii) Stunting: only chronic malnutrition, and (iv) stunting and Wasting: with both acute and chronic malnutrition. Weight for height and height for age values have accordingly been grouped as follows:-

Nutritional Status	SD-Score
Normal	≥ -2 for Weight for Height and ≥ -2 for Height for age.
Wasting (only)	< -2 for Weight for Height and ≥ -2 for Height for age.
Stunting (only)	> -2 for weight for height and ≤ -2 for height for age.
Stunting + Wasting	< -2 for weight for height and < -2 for height for age.

The above classification could be presented in tabular form as follows:-

	Height for age SD Scores	
	< -2	≥ -2
Weight for Height SD-Scores		
< -2	Stunted + Wasted	Wasted (only)
≥ -2	Stunted (only)	Normal

The results as per the above classification are given in Tables 16 and 17. As can be perceived from Table 16, where the data are tabulated according to Waterlow classification by sec, the incidence of generally wasted and stunted children were reported to be about 8 and 60 percent, respectively. By sex, proportion generally wasted and stunted were about 9 and 61 percent among boys

and 8 and 59 percent among girls, respectively. Among these, children with nutritional problem of only wasting, only stunting and with both (i.e., wasting and stunting) amounted to 4.4, 56.0 and 3.7 percent respectively. This levels only about 36 percent of children with normal nutritional status.

As can be further observed from Table 17, the gravity of nutritional problem was rather serious among those children between the first and second year of age. For example, about 33,38 and 40 percent of children in the age-group 6-11, 24-35 and 36-39 months, respectively, were reported normal while this was as low as 27 percent in the age-group 12-23 months (see Table 17 for further detail).

In order to assess the overall situation of nutritional status an attempt has been made to present a summary of nutritional status indicators on the whole, by considering -2SD as a cut off point at this point, and to present a comparison of some of these indicators with those of few other developing countries.

A Summary of Nutritional Status by Broad Age-Group in Rural Ethiopia, 1983

Nutritional Status	Broad age group (in months)			
	6 - 11	12 - 23	24-59	6 -59
Percent stunted	62.6	67.6	56.7	59.2
Percent wasted	5.9	8.8	8.3	8.1
Percent under weight	26.8	42.1	37.0	36.9
Total No. of children in the sample	1,111	2,055	6,271	9,437

Prevalence (in percent) of Moderate & Sever Malnutrition as Compared to some Developing Countries

Country	Under weight (0 - 4 Years)	Wasting (12-23 months)	Stunting (24-59 months)
Ethiopia	37(1)	9	48(2)
Malawi	24	8	61
Kenya	23	10	42
Egypt	13	2	32
Mali	31	16	34
Lesotho	16	7	23
Zimbabwe	12	2	31
Haiti	37	17	51

Note:- 1 refers to only those aged 6-59 months.
2 refers to only those aged 36-59 months.

Source:- United Nations Children's Fund (UNICEF); The State of World Children 1991, Oxford University Press, U.K.

As the source of our data has been confined for a limited age boundaries the comparison is also limited accordingly. Beside, the data under study refer to post harvest period while the data for other countries which are used for comparison do not clearly indicate the period. the comparison clearly shows that excepting for wasting, prevalence of malnutrition is among the highest if not highest in Ethiopia.

5. Differentials in Nutritional Status.

Very little is known about how differences in geographical location and child feeding practices affect nutritional status of the various sub-groups of children of the rural sedentary

population of Ethiopia. In an attempt of filling this gap or at least in narrowing it, we have tried next to assess the main effect of some variables considered in the survey. These include:-

Age
Sex;
Region;
Religion;
Number of meals taken daily;
Arrangement of eating;
Order of eating;
Status of breast feeding;
Age at which breast feeding stopped;
Status of food supplementation and
Age at which food supplementation started.

Nutritional status of children classified by these variables has been presented in Tables 18 through 26 and Figures 16 through 19. Nevertheless, as it has been observed from the result of applying a one way analysis of variance (see Table 27), only variables such as age, region, number of meals taken daily, order of eating, status of breast feeding, age at which breast feeding stopped, and age at which food supplementation started were found to have significant nutritional effect, and hence only these variables are discussed next.

5.1 Regional Variation in Childhood Nutritional Status

As pointed out in the previous section, although malnutrition in childhood was generally high, regional variation were rather highly discernible. From Table 18 and Figures 16 through 19, where the various nutritional status classifications are presented, it can be seen that of all the 12 regions covered by the survey, children of the rural dwellers of Gonder, Wello and Gamo-Goffa seem

to suffer more from chronic under nutrition in post harvest period in 1983. A comparison of those children who were nutritionally stunted further shows that children in Bale, Illubabor, Wellega, Hararge and Arssi in the given order enjoyed relatively better nutritional status than those in Shewa, Kefa, Sidamo and Gojjam; and these children intern were at least better than those in Gonder, Wello and Gamo-Goffa. The proportion of children with generally wasted nutritional status varied from lowest in Arssi and Bale to highest in Hararge, Illubabor, Wellega and Wello. Further, those nutritionally wasted as well as stunted varied from highest in Wello (6.0%) to lowest in Bale and Arssi (1.6% each).

Generally, it appears that, the gravity of malnutrition among children in the northern and south-eastern parts of the country seems more serious than those in the remaining parts. Nevertheless, it is important to note here that, this finding doesn't at all meant that child nutritional status in those regions with relatively lower nutritional problems was satisfactory. Because, as can be seen from Figure 19, prevalence of high undernourishment was quite common in every region.

5.2 Nutritional Status by Number of Meals Taken Daily

As it was pointed out in the introductory section of this report, it has been a well-documented fact that the major determinate directly affecting a young child's nutritional status is "food intake", that is, the amount of food a child is fed each day plus the protein energy and other nutrients content of the food given have been identified as the most important factors which limit the total amount of protein, calories, and other essential nutrients a child is able to ingest under normal circumstance. It can be assumed that the more food in quantity and quality a child ingest the better its nutritional status and further more the more daily meals taken by child the more food it ingests. Table 20 shows the number of meals usually taken during the 30 days preceding the

day of interview by nutritional status of children. As can be seen from this table, the result seems at best inconclusive and at worst contrary to expectation. The proportion of children whose nutritional status was normal was decreasing while that of stunting is increasing as number of times fed daily increase. This, to a larger extent, seems due to confounders of which further investigation beyond the scope of this report is required.

5.3 Nutritional Status by Order of Eating

Having looked at nutritional status by frequency of meals taken, we have attempted to investigate whether the nutritional status of children depends or not on having their meals first or second or last order. Here it is assumed that order of eating is likely to determine the quality and quantity of food taken. As can be seen from Table 22, where percentage distribution of children's nutritional status by order of eating is presented, recent nutritional status (i.e., being nutritionally wasted) consistently increased from lowest among those children fed in first order to highest among those lastly fed, while past nutritional history (i.e., being chronically malnourished or stunted) shows the opposite pattern on their order of eating. Prevalence of stunting has been recorded highest among those fed in the first group and lowest among those fed after the second group (i.e., the last order).

5.4 Nutritional Status by Status of Breast-feeding

As breast-milk is major source of diet at infancy, it has been attempted to envisage what impact, if any, does status of breast-feeding have among children aged 6 to 23 months on their nutritional status in rural Ethiopia. As can be seen from Table 23, whereby nutritional status of children aged 6-23 months is cross

classified by their status of breast-feeding, both stunting and wasting have been found to be more prevalent among those children who were breast-fed. This seems, to a larger extent, due to the fact that almost all (about 6 in every 7) children under consideration were breast-fed, as the result of which, if they are not supplemented by meals other than their mothers' breast-milk in reasonably sufficient quantity and quality, they would definitely be more stunted and more wasted than those fully dependent on meals other than their mothers breast milk. This arises from the well-documented fact that, mothers' breast milk, if not supplemented, will not be sufficient for infants after around 6 months age.

5.5 Nutritional Status by Age at which Breast-feeding Stopped

As we have stated it earlier child nutritional status is, especially at infancy, directly dependent on status of being breast-fed. A child, well breast-fed at infancy is not exposed to contaminated meals and has relatively better natural resistance to some diseases. Attempt has then been made to investigate what effect, if any, has age at which breast feeding stopped on children aged 6-23 months nutritional status of the rural sedentary population. The survey return was summarized and presented in Table 24. As can be seen from this table, of course in conformity with expectations, those who stopped breast feeding in the age group of 0-6 months had the worst past nutritional history than those children who stopped breast feeding while they were in the age group 7-12 and 13-24 months. Nevertheless, in terms of nutritional status of recent origin those children who stopped breast feeding while they were less than 6 months old were the best nutritional status being worst among those who stopped breast feeding in the age group 13-24 months. This is probably, due to the fact that those who stopped breast feeding while they were very young have already passed their age and hence have passed the complication of weaning period that could have acted negatively on their nutritional status of recent origin, while those in the other

extreme free are from this.

5.6 Nutritional Status of Children by Age at which Supplementation Started

Lastly, as it has been already described in connection with child nutritional status in the preceding sections, child breast feeding is almost universal and typically last until the end of first two years of life in rural Ethiopia. As supplementation of mothers' breast-milk is necessary and appropriate after around four months of life, we have attempted to explore the nutritional status of children aged under two years in the society under consideration in relation to age at which they started taking supplemental food (i.e., according to their weaning age). Looking at Table 26, where we have nutritional status cross-tabulated with weaning age, it can be observed that those children who started taking supplemental food earlier in life were with lower incidence of wasting, indicating once more that, among other things, children who started taking supplemental food earlier were currently with less incidence of wasting, possibly because of the absence of weaning age complication at present. On the other hand prevalence of the incidence of chronic malnutrition (generally stunting) has been reported lowest among those children with weaning age of four to six months (i.e., excluding the result for those with weaning age of above nine months, as the sample has captured very few children in this age-group to give reliable information). Further, stunting has also been reported to be highest among those children who started taking supplemental food lately (after the age of seven months), and next highest among those who started taking supplemental food at zero to three month of age (i.e., just around their neonatal period). This is of course in conformity with speculations, as only mothers' breast-milk is not sufficient for the formers, while the latter by then were too young (with little developed solid food digestion ability) to take food other than mothers' breast-milk and likely to develop chronic weaning age

complications.

6. Summary and Conclusion

The persistence of malnutrition as widespread problem with serious consequences for development and well-being of peoples has been receiving increasing attention from governments, public and private institutions throughout the world. It is thus a matter of great concern for researchers to establish and/or estimate at least the prevalence of malnutrition at national and regional levels.

In this respect the analyses presented in this report on Second Round Nutrition Survey of 1983, offer national and regional level results on nutritional status with preliminary investigations into selected relationships between nutritional status and feeding practices as well as religion of the population under consideration. At this level of the analysis we have also made an attempt to gauge the extent of child nutritional status differentials by examining the main effects of the variable considered. In the course of our analysis the following were facts most prominently and consistently observed:

-nearly three children in five (59.8 percent) in rural Ethiopia were found to suffer from chronic malnutrition which is manifested as nutritional stunting (low height for age). The incidence of generally wasted children were reported to be about 8. By sex, proportion generally wasted and stunted were about 9 and 61 percent among boys and about 8 and 59 percent among girls, respectively. The prevalence of general malnutrition (prevalence of underweight) was as high as 37 for box sexes,about 38 and 36 percent for boys and girls, respectively.

-the gravity of nutritional problem was rather serious among those children between the first and second year of age.

-although the prevalence of malnutrition was generally high, regional variations were unexplainably high. It appears that the gravity of malnutrition among children in the northern and south-eastern parts of the country seems more serious than those in the remaining parts.

-Variables such as age, region, order of eating, number of meals taken daily, status of food supplementation and breast-feeding have statistically significant effect on child nutritional status. In fact, the variables considered may not only be related to systematic differences in child nutritional status, but may also condition the influence of other factors. These are interaction effects, and are demanding further investigation beyond the scope of the present report.

In general, at this stage of analysis we have tried to show the gravity of nutritional problem prevailing in the rural parts of the country during post-harvest period of 1993. At least, we have come to conclude that while nutritional wasting was not problem (only about 8 percent wasted) during post-harvest period, nutritional stunting was highly prevalent. This should definitely be considered in programs aimed at ameliorating the population's nutational problems and should be used in evaluating such programs. The success of any of such programs can best be judged by the extent to which it reduces the prevailing high level of malnutrition and minimizes the existing differentials especially among the various geographic areas.

Further, it is hoped that this report, in itself, will provide useful information and will also stand as an elaboration on mark for the previous report of the same survey and as a bench mark for future studies.

Table 16 Percentage Distribution of Children Aged 6-59 Months by Nutritional Status (stunting and/or wasting Classification) and Sex.

Sex	Weight For Height SD-Score	Entery Design-ation	Height for Age SD-Score < -2	Height for Age SD-Score ≥ -2	Total
Male	< -2	Number	193	218	411
		Percent	4.0	4.6	8.6
	≥ -2	Number	2,712	1,649	4,361
		Percent	56.8	34.6	91.4
	Total	Number	2,905	1,867	4,772
		Percent	60.9	39.1	100.0
Female	< -2	Number	158	197	355
		Percent	3.4	4.2	7.6
	≥ -2	Number	2,577	1,733	4,310
		Percent	55.2	37.2	92.4
	Total	Number	2,735	1,930	4,665
		Percent	58.6	41.4	100.0
Both Sexes	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.0	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 17 Percentage Distribution of Children Aged 6-59 Months by Nutritional Status (stunting and/or Wasting Classification) and Age-Group(in Months).

Age-Group (in months)	Height for Height SD-Score	Entry Design-ation	Height for Age SD-Score <-2	≥-2	Total
6 - 11	< -2	Number	12	54	66
		Percent	1.1	4.9	5.9
	≥ -2	Number	684	361	1,045
		Percent	61.6	32.5	94.1
	Total	Number	696	415	1,111
		Percent	62.6	37.4	100.0
12 - 23	< -2	Number	77	103	180
		percent	3.7	5.0	8.8
	≥ -2	Number	1,312	563	1,875
		Percent	63.8	27.4	91.2
	Total	Number	1,389	666	2,055
		Percent	67.6	32.4	100.0
24 - 35	< -2	Number	108	97	205
		Percent	5.0	5.5	9.4
	≥ -2	Number	1,138	827	1,965
		Percnet	52.4	38.1	90.6
	Total	Number	1,246	924	2,170
		Percent	57.4	42.6	100.0
36 - 59	< -2	Number	154	161	315
		Percent	3.8	3.9	7.7
	≥ -2	Number	2,155	1,631	3,786
		Percent	52.5	39.8	92.3
	Total	Number	2,309	1,792	4,101
		Percent	56.3	43.7	100.0
6 - 59	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.1	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 18 Percentage Distribution of Children Aged 6-59 Months by Nutritional Status (stunting and/or Wasting Classification) and Region.

Region	Weight for Height SD-Score	Entry Designation	Height for Age SD-Score		
			< -2	≥ -2	Total
Arssi	< -2	Number	14	18	32
		Percent	1.6	2.1	3.7
	≥ -2	Number	471	352	823
		Percent	55.1	41.2	96.3
	Total	Number	485	370	855
		Percent	56.7	43.3	100.0
Bale	< - 2	Number	11	20	31
		Percent	1.6	2.9	4.5
	≥ -2	Number	335	317	652
		Percent	49.0	46.4	95.5
	Total	Number	346	337	683
		percent	50.7	49.3	100.0
Gamo-Gofa	< -2	Number	16	19	35
		Percent	2.7	3.2	5.8
	≥ -2	Number	384	184	568
		Percent	63.7	30.5	94.2
	Total	Number	400	203	603
		Percent	66.3	33.7	100.0
Gojjam	< -2	Number	42	21	63
		Percent	5.6	2.8	8.4
	≥ -2	Number	442	243	685
		Percent	59.1	32.5	91.6
	Total	Number	484	264	748
		Percent	64.7	35.3	100.0
Gonder	< -2	Number	30	24	54
		Percent	4.0	3.2	7.3
	≥ -2	Number	521	169	690
		Percent	70.0	22.7	92.7
	Total	Number	551	193	744
		Percent	74.1	25.9	100.0
Hararge	< -2	Number	32	68	100
		Perecent	4.7	10.0	14.6
	≥ -2	Number	343	239	582
		Percent	50.3	35.0	85.3
	Total	Number	375	307	682
		Percent	55.0	45.0	100.0
Illubabor	< -2	Number	26	41	67
		Percent	4.4	6.9	11.3
	≥ -2	Number	277	247	524
		Percent	46.9	41.8	88.7
	Total	Number	303	288	591
		Percent	51.3	48.7	100.0

Table (contd.)

Region	Weight for Height SD-Score	Entry Designation	Height for Age SD-Score		
			< -2	≥ -2	Total
Kefa	< -2	Number	23	27	50
		Percent	3.7	4.4	8.1
	≥ -2	Number	353	215	568
		Percent	57.1	34.8	91.9
	Total	Number	376	242	681
		Percent	60.8	39.2	100.0
Shewa	< -2	Number	58	72	130
		Percent	3.4	4.2	7.6
	≥ -2	Number	960	611	1,571
		Percent	56.4	35.9	92.4
	Total	Number	1,018	683	1,701
		Percent	59.8	40.2	100.0
Sidamo	< -2	Number	14	21	35
		Percent	2.4	3.5	5.9
	≥ -2	Number	357	205	562
		Percent	59.8	34.3	94.1
	Total	Number	371	226	597
		Percent	62.1	37.9	100.0
Wellega	< -2	Number	52	62	114
		Percent	4.9	5.8	10.7
	≥ -2	Number	510	444	954
		Percent	47.8	41.6	89.3
	Total	Number	562	506	1,068
		Percent	52.6	47.4	100.0
Wello	< -2	Number	33	22	55
		Percent	6.0	4.0	10.1
	≥ -2	Number	336	156	492
		Percent	61.4	28.5	89.9
	Total	Number	369	178	547
		Percent	67.5	32.5	100.0
All Region	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.0	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 19 Percentage Distribution of Children Aged 6-59 Months by Nutritional Status (Stunting and/or Wasting Classification) and Religion.

Religion	Weight for Height SD-Score	Entry Designation	Height for Age SD-Score < -2	Height for Age SD-Score ≥ -2	Total
ORTHODOX	< -2	Number	192	221	413
		Percent	3.7	4.2	8.0
	≥ -2	Number	2,954	1,815	4,769
		Percent	57.0	35.0	92.0
	Total	Number	3,146	2,036	5,182
		Percent	60.7	39.3	100.0
OTHER CHRISTIAN	< -2	Number	17	22	39
		Percent	2.6	3.4	6.0
	≥ -2	Number	382	234	616
		Percent	58.3	35.7	94.0
	Total	Number	399	256	655
		Percent	50.9	39.1	100.0
ISLAM	< -2	Number	113	136	249
		Percent	4.0	4.8	8.8
	≥ -2	Number	1,525	1,052	2,577
		Percent	54.0	37.2	92.2
	Total	Number	1,638	1,188	2,826
		Percent	58.0	42.0	100.0
Others + Not Stated	< -2	Number	29	36	65
		Percent	3.7	4.7	8.4
	≥ -2	Number	428	281	709
		Percent	55.3	36.3	91.6
	Total	Number	457	317	774
		Percent	59.0	41.0	100.0
Total	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.1	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 20 Percentage Distribution of Children Aged 6-59 Months by Nutritonal Status (Stunting and/or Wasting Classification) and Number of Meals Usually Taken During the Last 30 Days.

No. of Males Daily taken During the Last 30 days	Weight for Height SD-Score	Entry Design-ation	Height for Age SD-Score		
			< -2	≥ -2	Total
Less than or equal to two	< -2	Number	16	10	26
		Percent	5.9	3.7	9.7
	≥ -2	Number	117	126	243
		Percent	43.5	46.8	90.3
	Total	Number	133	136	269
		Percent	49.4	50.6	100.0
3 to 4	< -2	Number	144	151	295
		Percent	3.8	4.0	7.8
	≥ -2	Number	1,921	1,545	3,466
		Percent	51.1	41.1	92.2
	Total	Number	2,065	1,696	3,761
		Percent	54.9	45.1	100.0
5 to 8	< -2	Number	142	202	34.4
		Percent	3.3	4.7	8.1
	≥ -2	Number	2,499	1,425	3,924
		Percent	58.6	33.4	91.9
	Total	Number	2,641	1,627	4,268
		Percent	61.9	38.1	100.0
More than or equal to nine	< -2	Number	46	49	95
		Percent	4.2	4.4	8.6
	≥ -2	Number	731	276	1,007
		Percent	66.3	25.0	91.4
	Total	Number	777	325	1,102
		Percent	70.5	29.5	100.0
Not Stated	< -2	Number	3	3	6
		Percent	8.1	8.1	16.2
	≥ -2	Number	21	10	31
		Percent	56.8	27.0	83.8
	Total	Number	24	13	37
		Percent	64.9	35.1	100.0
Total	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.1	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 21 Percentage Distribution of Children Aged 6-59 Months by Nutritional Status (Stunting and/or Wasting Classification) and Arrangement of Eating.

Arrangement of Eating	Weight for Height SD-Score	Entry Design-ation	Height for Age SD-Score		
			< -2	≥ -2	Total
All from same dish	< -2	Number	59	57	116
		Percent	4.3	4.2	8.5
	≥ -2	Number	766	488	1,254
		Percent	55.9	35.6	91.5
	Total	Number	825	545	1,370
		Percent	60.2	39.8	100.0
Eash from separate dish	< -2	Number	7	12	19
		Percent	2.9	4.9	7.8
	≥ -2	Number	134	90	224
		Percent	55.1	37.0	92.2
	Total	Number	141	102	243
		Percent	58.0	42.0	100.0
In two or more groups	< -2	Number	285	346	631
		Percent	3.6	4.4	8.1
	≥ -2	Number	4,389	2,804	7,193
		Percent	56.1	35.8	91.3
	Total	Number	4,674	3,150	7,824
		Percent	59.7	40.3	100.0
Total	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.1	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 22 Percentage Distribution of Children Aged 6-59 Months by Whether they are stunted and/or Wasted or not and Order of Eating.

Order of eating	Weight for Height SD-Score	Entry Design-ation	Height for Age SD-Score		
			< -2	≥-2	Total
First Group	< -2	Number	155	186	341
		Percent	3.4	4.0	7.4
	≥ -2	Number	2,728	1,534	4,262
		Percent	59.3	33.3	92.6
	Total	Number	2,883	1,720	4,603
		Percent	62.6	37.4	100.0
Second Group	< -2	Number	112	132	244
		Percent	4.1	4.9	9.0
	≥ -2	Number	1,428	1,049	2,477
		Percent	52.5	38.6	91.0
	Total	Number	1,540	1,181	2,721
		Percent	56.6	43.4	100.0
Third or above	< -2	Number	26	40	66
		Percent	3.6	5.5	9.1
	≥ -2	Number	363	298	661
		Percent	49.9	41.1	90.9
	Total	Number	389	338	727
		Percent	53.5	46.5	100.0
Total (including all from same dish)	< -2	Number	351	415	766
		Percent	3.7	4.4	8.1
	≥ -2	Number	5,289	3,382	8,671
		Percent	56.1	35.8	91.9
	Total	Number	5,640	3,797	9,437
		Percent	59.8	40.2	100.0

Table 23 Percentage Distribution of Children Aged 6-23 Months by Status of Breast-Feeding and Nutritional Status.

Status of Breast-Feeding	Weight for Height SD-Score	Entry Design-ation	Height for Age SD-Score		
			< -2	≥ -2	Total
Being Breast-fed	< -2	Number	92	148	240
		Percent	3.1	5.0	8.1
	≥ -2	Number	1,901	839	2,740
		Percent	63.8	28.2	91.9
	Total	Number	1,933	987	2,980
		Percent	64.9	33.1	100.0
Not Being Breast-fed	< -2	Number	8	12	20
		Percent	2.6	3.9	6.4
	≥ -2	Number	161	130	291
		Percent	51.8	41.8	93.6
	Total	Number	169	142	311
		Percent	54.3	45.7	100.0
Total (6 - 23)	< -2	Number	100	160	26.0
		Percent	3.0	4.9	7.9
	≥ -2	Number	2,062	969	3,031
		Percent	62.7	29.4	92.1
	Total	Number	2,162	1,129	3,291
		Percent	65.7	34.3	100.0

Table 24- Percentage Distribution of Children aged 6 - 23 months by Age at which Breast-feeding Stopped and Nutritional status.

Age(in mth.) Breast-feeding Stopped	Weight for Height SD-Score	Entry Designation	Height for Age SD-Score < -2	≥ -2	Total
0 - 6	< -2	Number	1	0	1
		Percent	1.4	0.0	1.4
	≥ -2	Number	40	30	70
		Percent	56.3	42.3	98.6
	Total	Number	41	30	71
		Percent	57.7	42.3	100.0
7 - 12	< -2	Number	2	4	6
		Percent	1.6	3.2	4.8
	≥ -2	Number	65	53	118
		Percent	52.4	42.8	95.2
	Total	Number	67	57	124
		Percent	54.0	46.0	100.0
13 - 24	< -2	Number	3	4	7
		Percent	4.1	5.4	9.5
	≥ -2	Number	37	30	67
		Percent	50.0	40.5	90.5
	Total	Number	40	34	74
		Percent	54.1	45.9	100.0
Not Stated	< -2	Number	2	4	6
		Percent	4.8	9.5	14.3
	≥ -2	Number	19	17	36
		Percent	45.2	40.5	85.7
	Total	Number	21	21	42
		Percent	50.0	50.0	100.0
Total not Breast-fed	< -2	Number	8	12	20
		Percent	2.6	3.9	6.4
	≥ -2	Number	161	130	291
		Percent	51.8	41.8	93.6
	Total	Number	169	142	311
		Percent	54.3	45.7	100.0

Table 25 - Percentage Distribution of Children aged 6 -23 months by Status of food Supplementation and Nutritional Status.

Status of Supplementation	Weight for Height SD-Score	Entry Designation	Height for Age SD-Score < -2	Height for Age SD-Score ≥ -2	Total
Supplemented	< -2	Number	82	123	205
		Percent	3.2	4.8	8.0
	≥ -2	Number	1,614	745	2,359
		Percent	62.9	29.1	92.0
	Total	Number	1,696	868	2,564
		Percent	66.1	33.9	100.0
Not Supplemented	< -2	Number	12	32	44
		Percent	2.1	5.6	7.7
	≥ -2	Number	382	146	528
		Percent	66.8	25.5	91.3
	Total	Number	394	178	572
		Percent	68.9	31.1	100.0
Total (including not stated)	< -2	Number	100	160	260
		Percent	3.0	4.9	7.9
	≥ -2	Number	2,062	969	3,031
		Percent	62.7	29.4	92.1
	Total	Number	2,162	1,129	3,291
		Percent	65.7	34.3	100.0

Table 26 Percentage Distribution of Children Aged 6-23 Months by Age (in months) at which Supplementation Started and Nutritional Status.

Age (in months) Supplementation Started	Weight for Height SD-Score	Entry Design-ation	Height for Age SD-Score		
			< -2	≥ -2	Total
0 - 3	< -2	Number	11	20	31
		Percent	2.0	3.6	5.6
	≥ -2	Number	352	169	521
		Percent	63.8	30.6	94.4
	Total	Number	363	189	552
		Percent	65.8	34.2	100.0
4 - 6	< -2	Number	10	39	49
		Percent	1.3	5.2	6.6
	≥ -2	Number	467	228	695
		Percent	62.8	30.6	93.4
	Total	Number	477	267	744
		Percent	64.1	35.9	100.0
7 - 8	< -2	Number	57	57	114
		Percent	4.8	4.8	9.7
	≥ -2	Number	746	317	1,063
		Percent	63.4	26.9	90.3
	Total	Number	803	374	1,177
		Percent	68.2	31.8	100.0
9 & above (including not stated)	< -2	Number	4	7	11
		Percent	4.4	7.7	12.1
	≥ -2	Number	49	31	80
		Percent	53.8	34.1	87.9
	Total	Number	53	38	91
		Percent	58.2	41.8	100.0
Total	< -2	Number	82	123	205
		Percent	3.2	4.8	8.0
	≥ -2	Number	1,614	745	2,359
		Percent	62.9	29.1	92.0
	Total	Number	1,696	868	2,564
		Percent	66.1	33.9	100.0

Table 27 Nutritional Status Differentials of Children by Selected Socio-Demographic and Feeding Practice Variables in Rural Ethiopian, 1983

Strata	Nutritional Status Indicators								
		MEAN HAZ			MEAN WAZ			MEAN WHZ	
	N	MEAN	S.D	N	MEAN	S.D.	N	MEAN	S.D
Total Sample	9,437	-2.38	2.03	9,437	-1.60	1.31	9,437	-0.09	1.60
Age (in months)									
6 - 23	3,069	-2.62	2.11	3,155	-1.55	1.46	3,047	0.40	2.02
24 - 59	6.178	-2.27	1.97	6,250	-1.63	1.23	6,122	-0.33	1.28
P value		0.000			0.055			0.000	
Sex									
Male	4,689	-2.44	2.00	4,752	-1.65	1.28	4,647	-0.13	1.57
Female	4,559	-2.36	2.05	4,655	-1.56	1.34	4,522	-0.05	1.63
P value		0.400			0.003			0.003	
Region									
Arssi	849	-2.17	1.84	854	-1.26	1.23	845	0.17	1.29
Bale	674	-2.02	2.00	684	-1.18	1.29	666	0.16	1.54
G.Gofa	582	-2.68	2.12	599	-1.57	1.29	579	0.29	1.65
Gojjam	743	-2.60	1.70	746	-1.88	1.19	739	-0.28	1.46
Gonder	732	-2.95	1.81	743	-2.10	1.10	724	-0.29	1.41
Hararge	672	-2.12	2.39	676	-1.52	1.42	659	-0.19	1.98
Illubabor	577	-1.94	2.27	591	-1.54	1.40	578	-0.38	1.66
Kefa	606	-2.49	2.04	617	-1.70	1.35	599	-0.10	1.56
Shewa	1,625	-2.48	2.07	1,695	-1.47	1.32	1,607	0.13	1.70
Sidamo	590	-2.53	1.97	594	-1.47	1.35	591	0.09	1.51
Wellega	1,057	-2.08	1.77	1,062	-1.81	1.21	1,050	-0.65	1.22
Wello	541	-2.90	2.12	546	-1.88	1.32	532	-0.01	1.92
P value		0.000			0.000			0.000	
Religion									
Orthodox	5,060	-2.44	1.93	5,169	-1.65	1.27	5,035	-0.12	1.57
Other Christ.	648	-2.32	1.99	652	-1.57	1.28	645	-0.10	1.57
Islam	2,786	-2.35	2.16	2,818	-1.55	1.35	2,736	-0.06	1.67
Others	702	-2.35	2.20	716	-1.53	1.40	701	-0.01	1.47
P value		0.145			0.000			0.158	

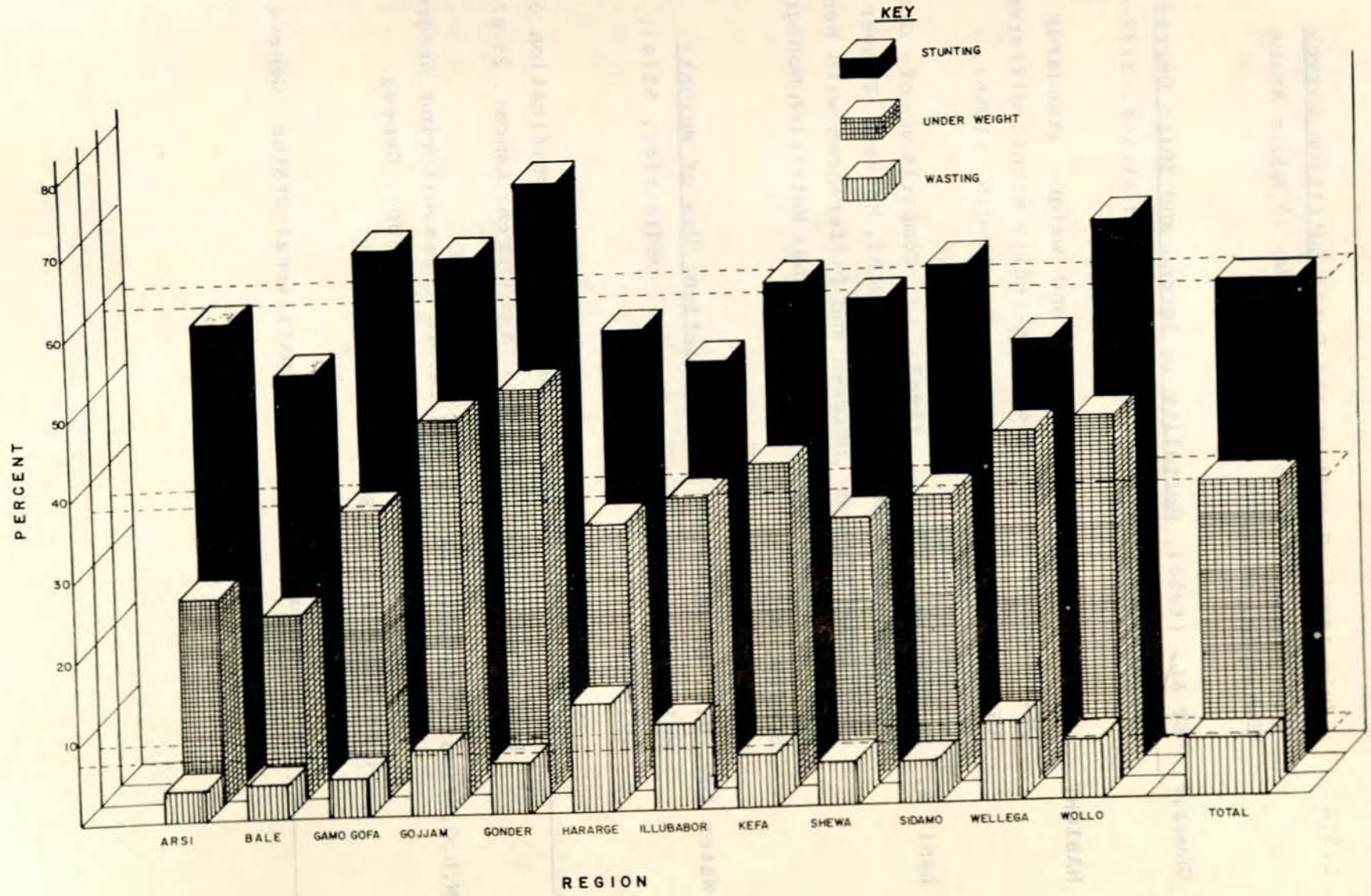
Table 27 (contd.)

Strata	Nutritional Status Indicators								
		MEAN HAZ			MEAN WAZ			MEAN WHZ	
	N	MEAN	S.D.	N	MEAN	S.D.	N	MEAN	S.D
Arrangment of meal									
All from same dish	1,339	-2.44	2.06	1,365	-1.64	1.28	1,331	-0.09	1.60
Each from Separate dish	236	-2.43	2.14	244	-1.59	1.30	236	0.07	1.81
In two or more groups	7,666	-2.39	2.02	7,791	-1.60	1.32	7,595	-0.09	1.55
P value		0.634			0.935			0.386	
Order of eating									
First group	4,493	-2.51	1.99	4,592	-1.61	1.34	4,460	0.02	1.64
Second group	2,679	-2.27	2.01	2,709	-1.60	1.26	2,646	-0.25	1.50
Third or above	721	-2.13	2.17	724	-1.54	1.32	716	-0.17	1.61
P value		0.000			0.119			0.000	
Status of Breast-Feeding									
Being Breast feed	2,886	-2.68	2.11	2,972	-1.59	1.46	2,865	0.39	2.02
Not Being Breast-fed	304	-2.18	2.15	308	-1.30	1.41	299	0.18	1.66
P value		0.000			0.000			0.075	
Status of food Supplemention									
Supplemented	2,502	-2.65	2.09	2,558	-1.56	1.46	2,485	0.31	1.93
Not Supplemented	513	-2.74	2.29	545	-1.63	1.48	505	0.77	2.32
P value		0.442			0.990			0.000	
No of meals taken Daily									
Less than or equal to two	265	-1.91	1.91	268	-1.58	1.34	265	-0.56	1.25
3 to 4	3,702	-2.21	2.03	3,746	-1.56	1.26	3,666	-0.25	1.42
5 to 8	4,182	-2.47	2.02	4,257	-1.59	1.31	4,150	-0.00	1.65
more than or equal to nine	1,069	-2.89	1.94	1,102	-1.79	1.44	1,061	0.24	1.90
P value		0.000			0.000			0.000	

Table 27 (contd.)

Strata	Nutritional Status Indicators								
	MEAN HAZ			MEAN WAZ			MEAN WHZ		
	N	MEAN	S.D.	N	MEAN	S.D	N	MEAN	S.D.
Age Breast-feeding stopped									
0 - 6	70	-2.44	1.67	70	-1.19	1.47	68	0.69	1.48
7 - 12	121	-2.34	2.21	123	-1.37	1.39	121	0.26	1.86
13 - 24	97	-1.93	2.25	98	-1.22	1.36	94	-0.16	1.41
P.value		0.131			0.447			0.005	
Age food Supplementation Started									
0 - 3	543	-2.62	2.00	549	-1.42	1.46	543	0.63	1.80
4 - 6	721	-2.53	2.23	743	-1.45	1.43	719	0.42	2.02
7 - 8	1,144	-2.78	2.02	1,174	-1.72	1.46	1,134	0.10	1.89
P value		0.036			0.000			0.000	

Figure 19 - PREVALENCE OF MALNUTRITION BY REGION, RURAL 1983.



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