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MATERNAL PARTICIPATION PATTERNS IN A COMMUNITY-BASED GROWTH MONITORING PROGRAMME IN NORTH-EAST BRAZIL

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Dissertation submitted in part fulfilment of the requirements for the Master of Science Degree in Mother and Child Health

December
1988

ABSTRACT

Maternal participation patterns in a community-based growth monitoring programme in North-East Brazil were analyzed. The cultural, socio-economic and health-related characteristics of participant and non-participant mothers and children were identified and compared. It was found that 30% of mothers and their respective children living within the programme's catchment area did not participate in the growth-monitoring programme. Participation was higher in urban than rural areas. Mothers were asked their reasons for non-participation in the programme and in 30% of cases claimed that they had never been invited to participate. Non-participant mothers showed higher rates of illiteracy, non-use of available health resources, child deaths and hospitalization that participant mothers. No significant difference in relation to age, family income or the nutritional status of their children was observed between the two groups of mothers.

It was concluded that a large number of children of mothers from the non-participant group were highly at risk and that steps to reach them with the growth-monitoring programme should be taken. Suggestions for achieving this objective were formulated.

ACKNOWLEDGEMENTS

I would like to express my gratitude to the following people and Institutions.

Professor David Morley, Dr. G.J. Ebrahim, Dr. Pamella Zinkin and Ms. Patricia Harman, for their support and guidance throughout this course.

All the members of the Tropical Child Health Unit staff, especially Ms. Grazina Bonati, for all the help and kind attention.

Dr. Auxiliadora de Souza and Dr. Sulivan Motta, for all the support and encouragement I received from them.

Dr. Jay McAuliffe, Dr. Marilyn Nations and Dr. Malbio Rolim, for the technical support they offered in Fortaleza, which made this field study possible.

Dr. Zuleica Thompson, for the encouragement and advice.

Nurses Lucia Sousa, Lucilia Falcao and Marta Ribeiro for all the help and patience during my field work.

The British Council, for their broad support during my stay in Britain and, in particular, Mr. Tony Andrews, the British Council Regional Director in Recife, Brazil, for his support and kind attention.

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LIST OF ABBREVIATIONS

CHW -	Community Health Worker
ORS -	Oral Rehydration Solution
ORT -	Oral Rehydration Therapy
WS -	Weighing Session
GMP -	Growth Monitoring Programme
FSP -	Food Supplementation Programme
WHO -	World Health Organization
PROAIS -	Integrated Health Action Programme
ICDS -	Integrated Community Development Project
UPGK -	Indonesian Family Nutrition Programme
TINP -	Tamil Nadu Integrated Nutrition Project

INTRODUCTION

Mothers role in child health care has long been discussed by numerous health experts and social scientists. Worldwide, and more specifically in traditional/poor communities, responsibility for children's health has been placed almost entirely on the mothers.

Children are largely dependent on mothers to recognise their health needs and to ensure that necessary care is obtained (1). Hence, mother's awareness of child health matters is extremely desirable. In that sense, child growth monitoring appears as an activity that has a large potential in promoting such awareness(38).

1.1 THE CHILD GROWTH MONITORING BASIS.

As defined in a workshop held by The Foundation for Indonesian Welfare (YIS) in Yogyakarta, Indonesia, 1984, growth monitoring is a process of sequential measurements for the assessment of physical growth and development of individuals in the community with the purpose of promoting child health, human development and quality of life(2).

The earliest modern report of growth monitoring came from clinic based activities by David Morley in West Africa(3). He also first established the technical basis for growth monitoring activities when published together with Margaret Woodland: "See how they grow: monitoring child growth for appropriate health care in developing countries"(4, 5).

The rationale of growth monitoring basically stands in the premise, largely demonstrated in numerous community nutrition studies, that infection, inappropriate child feeding practices and poor diet are directly responsible for growth failure and consequent malnutrition and ill health among children (6, 39). Regular weighing of children helps

mothers to visualise early growth faltering and enables them to initiate timely preventive action, before the problem becomes severe (7). Ultimately the major goal of growth monitoring is to include mothers in an active and regular fashion in providing for themselves and their children regular access to basic primary health resources(8).

According to Ghassemi (6) the major impact of growth monitoring is expected to be in building awareness, sense of felt needs on child care and growth, and sense of empowerment of mothers to take initiatives in this area, which would lead to community level action.

1.2 THE NEED FOR ACTIVE PARTICIPATION OF MOTHERS.

Monitoring child growth is an action that demands active participation of mothers. As emphasized by Herbert (9) growth monitoring, of all the activities stressed by UNICEF in the GOBI*, child survival strategy requires the highest level of instruction and participation. Without the active involvement of mothers, health workers and children, growth monitoring will, and usually does, function the most poorly of the four GOBI components. In a growth monitoring program mothers are not only required to regularly bring their children to weighing sessions, but also required to interpret child growth, to describe their child feeding practices, to discuss health and nutritional advices and to apply them at home as necessary.

All this effort is likely to lead mothers to adopt better child rearing practices and thus to improve their children's health and nutritional status. In addition, demand for appropriate health services is expected to be generated by that mother's growing awareness (6).

* GOBI = Growth monitoring, oral rehydration therapy, breast-feeding promotion and immunization.

1.3 THE GROWTH MONITORING PROGRAMME'S IMPACT.

Increasing demand for health services, especially those related to child, rather than improvement of nutritional status of children, has been the outcome most often observed in many growth monitoring programmes world-wide. In Haiti a community-based monthly weight rally programme evaluation showed that children in participating villages had a higher rate of immunization (15% vs 2%) and had almost double the use of ORS (30% vs 17%) but, interestingly, their children were no better nourished than in those from non-programme villages (8). Also, in Indonesia, in many of the 25,000 villages where the National Growth monitoring Programme operates nutritional benefits of weighing is not yet evident. However, the size of families has substantially decreased, thanks to the wide acceptance of family planning provided at the village level during the programme's weighing sessions (10). In addition Hendrata reinforces that ".... Children participating regularly in growth monitoring programmes have higher rates of immunization, better use of oral rehydration, more effective breast feeding, more appropriate introduction of weaning foods and their mothers are more likely to practice contraception and adhere to good hygienic practices in food handling (3). However, desirable active regular participation, that would yield optimum programme results, does not seem to be easily achieved, especially by poor mothers.

1.4 REACHING THOSE MOST IN NEED.

Taylor (11) has stressed that many current programmes focus growth monitoring on those who are most likely to practise the procedure consistently, rather than on those in greatest need. He also adds that " neighbourhood weighing days may become social events where mothers dress up and compare observations on how well their children are doing. While

this provides positive reinforcement for children who are doing well, it does not necessarily encourage a poor mother to bring her sick and malnourished child out for community attention. Growth monitoring may reach 90% coverage, but the remaining 10% may include many malnourished children". Building up such constraints, many others are likely to interfere in the participation of the neediest mothers in the programmes and thus cause high rates of irregular attendance and drop outs and even non-attendance at all. In this respect, Ghassemi discussing growth monitoring programmes coverage worldwide, says: " rate of participation within programme areas have not always been satisfactory. There are several factors involved children most in need of support are less accessible partly because of the limitations of program outreach and also because mothers of unhealthy children feel embarrassed in discussing problems of their children in public. Mothers have other demands on their time and allocation of time is often made on economic grounds. Therefore, poor and irregular participation, high drop out rates and very poor follow up are common among these programmes"(6).

Hence, access, behavioural, time and economic constraints are mentioned as causes of poor participation of mothers in growth monitoring programmes. However, as no palpable data is cited, it still remains unclear whether or not this information is based on consistent figures.

In a programme in which massive as well as active participation of mothers is crucial, the need for identifying more precisely who are the non-participant mothers and what are the real determinants of their non-participation seems basic. In addition, to asses the influence of mothers' levels of exposure to the programme over their awareness of child health and their childrens' health/nutritional status appears

relevant. These are research questions that this present study intends, to some extent, to clear up.

2 - BACKGROUND.

2.1 BRAZIL, THE LAND OF CONTRASTS.

In the last 2 decades Brazil has experienced a remarkable process of development that has led the country to rank eighth amongst the world's largest economies (12). Despite this extraordinary economic growth, poor housing, lack of sanitation and inadequate dietary intake still persist and explain the continuing high incidence of infections diseases and the elevated infant mortality rates (13). This ambiguous conditions reflects the marked social and regional inequalities that have long prevailed within the country and worse, have widened in the last few years.

The health and nutritional status of low income groups is far from being satisfactory and is likely to worsen in the future due to the economic crisis that has long affected the country. In addition the lack of provision of appropriate health care focused to such disadvantaged groups may also lead to a frustrating non improvement in some important health indicators of the country in the near future.

2.2 THE DISADVANTAGED NORTHEAST.

The country is divided into 5 geographical regions (see map) of which the north eastern region is the poorest. Its per capita income is less than half of those verified for the country as a whole. The region's land area comprises 18% of the Brazilian territory and its population makes up almost 30% of the country's total population of 141 million inhabitants (14). To emphasize the importance of the northeast

region in the context of Latin America it is worth mentioning that its population is greater than those of any South-American country and its land area is only smaller than that of Argentina. The economy of the northeast region is predominantly agricultural. However, most of its area lies within what is called the "drought polygon" where droughts recur and crops are consequently irregular. The peasant population, thus, escaping from the hardship of a semi-arid climate, migrates to urban areas to live in squatter settlements or favelas (a Brazilian term for shanty towns), under appalling conditions.

Within this region the state of Ceará (Appendix II) is the most often affected by both droughts and population mobility phenomena. Therefore it is not surprising that the state's health indicators figure amongst the worst within the country and even worldwide. According to a 1986 UNICEF sponsored study the state capital of Fortaleza, 2 million, had the highest Brazilian infant mortality rates which reaches a distressing 110-139 per 1,000 live births for poor and uneducated mothers respectively (15).

In late 1987 UNICEF sponsored a state-wide child health survey that was carried out by the Health Secretariat of the state of Ceará and other local institutions. This study comprised a representative sample of 8,000 households with 4,513 under three year old children and 10,868 women in the reproductive 15-49 years age interval. Results of this study showed an infant mortality rate of 106 per 1,000 live births for the whole state in the 1983-84 period. This index is considerably greater than that observed for the country as a whole in the same period that was about 70 per thousand (16). The main causes of infant deaths detected were diarrhoeal diseases, perenatal problems and respiratory

infections. A considerably large proportion of children involved in the study (27.6%) were found to be moderately to severely stunted and 12.8% of them were considered moderately to severely underweight. Despite 67.4% of the under-3 years children have been reported by mothers to have a growth chart less than 10% of them had been weighed in the prior three months period. Moreover, mothers stop breast feeding their babies at an early age. The median duration of breast feeding verified was only 3.5 months in the metropolitan area of Fortaleza and 4.5 months in the state's countryside. A significant 12% of the children under three years presented with diarrhoea on the day of the interview. However, for only one quarter of those children Oral Rehydration Therapy was being administered.

According to mothers' information only half of the 12-23 months old children in the study had completed the recommended series of basic vaccines. Even the oral anti-polio vaccine, that has been delivered country-wide through massive campaigns, reached only 73% of the children according to mother's information and less than 60% according to available vaccination cards (17).

2.3 IN SEARCH OF AN APPROPRIATE SOLUTION.

Operating within this distressing context is VIVA, a child survival project that is being carried out by PROJECT HOPE, in collaboration with the Federal University of Ceará (UFC) and with the support of the U.S. Agency for International Development (USAID). With headquarters in the capital of Fortaleza, this project is being executed in conjunction with PROAIS, a major PHC programme of the UFC. Operating in 32 locations (Appendix). 27 of them in rural areas within 100 km of Fortaleza, the PROAIS programme uses small, TBA staffed maternities as its basic health

unit.

VIVA, which began its operations in 1986, was designed to develop the GOBI strategies within PROAIS. The major strategy is to utilize CHWs to promote and/or execute basic activities which include Growth Monitoring, Oral Rehydration Therapy, Breast-feeding promotion and Immunization. The Community Maternity Units, with TBAs providing ante-natal, delivery and post-natal care, complement the promotional aspects of VIVA(19).

The results of a population-based survey carried out in 1987 by the PROAIS/VIVA programme in its coverage area provide an approximate picture of the impact obtained over the health of children. In this survey 653 mothers were interviewed. These mothers reported a total of 2677 live births (4.1/mother) of which 2193 (82%) were living. Of these, 977 children were under 5 years of age. 16 child deaths had been reported in the previous 12 month period. Of these 15 were under one year of age. This extrapolates to an infant mortality rate of 70 per 1000 live births. This IMR is comparable to that verified for the whole country and considerably smaller than that verified for the state of 106/1,000. Among the alleged causes of death diarrhoea accounted for 56% of the total(18).

In the PROAIS/VIVA survey, 90% of the mothers were recorded as being familiar with ORS. Of the 977 children under 5, the mothers of 77% were reported to have already utilized ORS. Diarrhoea had occurred in 187 (19%) of the households during the two week period prior to the survey. In 150 cases, the attack was considered mild and in 37 severe. ORS was being used in 90 (48%) of the total of cases reported. This shows an increase of 23% over the figures found for the whole state. With

regard to immunization coverage, of those children over 6 months of age, 70% had received 3 or more doses of anti-polio and 58% had received 3 or more doses of DPT. 67% of those over 9 months of age had been immunized against measles and 58% of all children had received one dose of BCG. This data refers to children whose vaccination card was checked.

For all vaccines the coverage of children living in the area of the PROAIS/VIVA programme was superior in about 15% in relation to that verified in the state-wide survey.

The prevalence of breast-feeding at 1, 3, 6 and 12 months was 91%, 72%, 42% and 25% respectively, whereas the prevalence of artificial milk feeding, often mixed with some starch, at the same stages was 47%, 71%, 87% and 94%. A growth chart had been distributed to 81% of the youngest children. Of those children with a growth chart, 68% had been weighed in the preceding 3 month period.

Although in the whole state a somewhat similar proportion of children had received a growth chart, only 10% of them had been weighed in the previous 3 month period.

2.4 THE COMMUNITY-BASED GROWTH MONITORING PROGRAMME.

Recognizing access as a major barrier for routine health services, VIVA is carrying out monthly community-based Growth Monitoring sessions, giving priority to "at risk neighbourhoods". These are deprived communities usually located in the outskirts of urban and rural cities where families live in poor housing and sanitation conditions, with a very low income. The weighing sessions are performed by CHWs who receive a basic 20 hours and subsequent in-service training given by local programme supervisors. Mothers are invited to bring their under 3 year

old children, with their respective growth charts, to a nearby, well-known home or public place within their community where the Growth Monitoring Sessions are carried out.

In 1 rural and 3 urban communities child weighing is being carried out in a house-to-house basis instead of using the central point in the community. A low attendance rate of mothers to the weighing sessions in urban areas has led CHWs to adopt the house-to-house system of weighing. Theoretically, it should increase the coverage of children within the programme's areas of operation.

Another alternative approach used by CHWs in these areas combines both the community and home-based approaches. CHWs group 2 or 3 mothers, who live nearby, with their respective children in the home of one of them and the children are weighed there. These alternative approaches, however, are not yet officially adopted by the programme.

Group and individual health and nutritional orientation is provided during the sessions. Moderately and severely malnourished children receive individual follow-up, including home visits, or they are referred to the nearest health facility available for appropriate care.

Up-to-date figures indicate that about 1800 children under 3 years of age are being weighed monthly by the programme.

3 - STUDY'S OBJECTIVES.

3.1 GENERAL OBJECTIVE:

To analyse the patterns of the participation of mothers in a community based growth monitoring programme, according to their socio-economic, cultural and educational background and their children's health and nutritional status.

3.2 SPECIFIC OBJECTIVES.

(a) To define the prevalence of the various levels of mothers' participation (regular, irregular or non-attendance) in the growth monitoring programme.

(b) To identify and to compare the socio-economic and health related characteristics of both participant and non-participant mothers and children.

(c) To analyse benefits perceived by mothers from the growth monitoring programme as well as their utilization of other primary health resources.

(d) To assess the use of growth charts, as a home-based child record in the programme's coverage area.

THE COMMUNITY BASED GROWTH MONITORING PROGRAMME

OBJECTIVES

4 - STUDY HYPOTHESES.

In order to assess whether or not the participation of mothers in a growth monitoring programme is beneficial to their children's health the following hypotheses will be assessed.

Hypothesis 1. Impaired access to primary health care services predisposes children to increased infectious diseases morbidity, mortality and/or severity as well as to a poor nutritional status.

Hypothesis 2. Growth monitoring programmes enhance the access and frequency of contacts of children to primary health resources as well as increasing the mothers awareness of child health/ nutritional matters.

Hypothesis 3. Children of mothers participating in growth monitoring have a decreased infectious disease morbidity, severity and/or mortality as well as better nutritional status as compared to children of non-participant mothers.

5 - METHODOLOGY

5.1 STUDY DESIGN.

An analytical retrospective study was thought to be suitable for achieving the established objectives. Relevant information on mother/child related variables was obtained. The information collected may be classified into two main groups (Table 1):

(a) The risk factors, associated with mother, family and programme features; and

(b) The indicators, related to child health and nutritional status.

TABLE 1 - STUDY MAIN VARIABLES.

RISK FACTORS	INDICATORS
- MOTHER'S - AGE - EDUCATION - PREVIOUS CHILD DEATHS - SIGNIFICANCE OF THE PROGRAMME - FAMILY INCOME - DISTANCE TO WEIGHING PLACES	- INFANT DIARRHOEA PREVALENCE - ORS USAGE - CHILDREN'S - IMMUNIZATION STATUS - NUTRITIONAL STATUS - HOSPITAL-IZATIONS - DEATHS - PARTICIPATION IN FOOD SUPPLEMENTATION PROGRAMMES

Additional socio-economic, environmental and growth monitoring programme related data were also collected in order to provide some complementary background information.

The study's basic design categorized the mothers as regular attenders, irregular attenders, dropouts and non-attenders, according to their participation in the growth monitoring programme (Table 2).

TABLE 2 - DEFINITION OF MOTHER'S PARTICIPATION.

CATEGORIES	CRITERIA
- REGULAR ATTENDERS	- Mothers who did not miss 2 (two) or more consecutive weighing sessions.
- IRREGULAR ATTENDERS	- Mothers who missed 2 (two) or more consecutive weighing sessions.
- DROPOUTS	- Mothers who did not attend the 3 (three) last, or more weighing sessions.
- NON-ATTENDERS	- Mothers who never attended at any weighing session

* In the 9 month period from Jan to Sep 1988.

To obtain the data needed for this study, the reference population was submitted to sampling procedures that are described in the following section.

5.2 STUDY SAMPLING PROCEDURES.

5.2.1 SAMPLING FRAME:

The study reference population comprised children aged 0 to 48 months and their mothers, who are currently living in the rural and urban squatter areas where the growth monitoring programme operates. The target population of the programme is 0 - 3 year old children. The age interval of 0-4 years was chosen to allow the inclusion in the study of children who were just excluded from the programme due to exceeding the age limit of 3 years.

The growth monitoring programme operates in 4 urban peripheral communities and in 14 rural communities. The total population of the districts in which the 14 rural and 4 urban communities are located is approximately 142,865 amongst whom there are 12,857 children under 3 years of age(19), estimating 9% for the proportion of under-3 children.

The programme, however, does not cover each district entirely, but only some of the poorest areas within it. They are the "at risk neighbourhoods". As there were no up-to-date maps available of such communities where the weighing sessions are carried out, their limits had to be defined with the help of community health workers. In each community the growth monitoring programme operates in 3 or 4 localities each with its own catchment area. A rough calculation gave a mean population of about 262 inhabitants living in each locality served by the programme, with approximately 24 under-3 children and 52 households. In fact the limits of the localities were determined by the capacity of CHWs to deal with a certain number of children in a single weighing session, rather than by their geographical boundaries. At the beginning of the growth monitoring programme, there was an agreement between the programme staff and local CHWs that no more than 25 under-3 children should attend a weighing session.

5.2.2 SAMPLING METHODS.

Of the 18 communities where the growth monitoring programme is in operation, 13 were selected to be sites for the study (Table 3). Those not selected were excluded because:

(a) One of the 5 communities was excluded because in that programme growth monitoring is linked to distribution of food: mothers have to weight the children to get the food. The choice of the mother for

participation in the programme was thus conditioned.

(b) The other 4 communities were excluded because they could not be reached due to time and transport difficulties beyond the author's control.

However the exclusion of 1/5th of the study population does not mitigate the results because the objective of the study was to inquire into the pattern of mothers participation in the programme, rather than programme coverage or impact.

As there were no house numbers and time constraints did not allow them to be numbered the following 4-stage method was employed to identify the households to be visited(36):

1. A central location in the community, usually a public tap or laundry, grocery, etc., was identified.
2. From this central point, the direction in which the first household would be located was drawn by lots.
3. Once the directional line had been determined, the location of the starting household at the two ends or middle of this line was again drawn by lots.
4. The order for visiting subsequent households was established through the identification of the household with at least one under-4 child nearest to the selected starting point. The next household would then be the nearest again with a child 0-48 months of age.

5.2.3 SAMPLE SIZE:

For an estimated prevalence rate of 30% of non-participant mothers in the programme area a sample size of 200 mothers allows a margin of tolerated error of 6.3%. The formula applied for that calculation was:

$$n = pq/(E/1.96)^2$$

where n is the minimum sample size required

p x 100 is the "maximum expected prevalence rate (%)"

q = 1 - p

and E x 100 is the "margin of error tolerated"

It was calculated that in each of the 13 selected communities 15 households should be selected for the study. This would yield a sample size of 195 households. However, a equal number of households for all the communities could not be reached due to time as well as local operational constraints. As a result,in some communities as shown in the following table the number of households surveyed had to be increased in order to compensate for the deficit generated in other communities. Naturally these former communities were easier for access and cooperation. The maximum number of households selected per community was 18 and the minimum 12.

TABLE 3.

COMMUNITIES SELECTED TO BE SITES OF THE STUDY AND NUMBER OF HOUSEHOLDS SURVEYED, ACCORDING TO URBAN OR RURAL LOCATION.

COMMUNITIES		No. OF HOUSEHOLDS SURVEYED
URBAN	1. JANGURUSSU	15
	2. PALMEIRAS	15
	3. SAO MIGUEL	16
	4. LAGOA REDONDA	18
	SUB TOTAL	64
RURAL	5. JUST. DE SERPA	12
	6. SIUPE	13
	7. PECEM	13
	8. JUBAIA	14
	9. ANTONIO DIOGO	15
	10. GUAIUBA	17
	11. ITAITINGA	18
	12. ITACIMA	18
	13. SAO LUIS	18
	SUB TOTAL	138
	TOTAL:	202

In the event a study population of 203 mothers was obtained. However, one mother had to be excluded from the final data analysis due to contradictory information given. Thus, a final study population of 202 mothers was left.

5.3 DATA COLLECTION.

An interviewer-administered questionnaire (appendix VI) was designed in order to collect information on mothers and children. A self-completion questionnaire (appendix VI) was administered to the programme's CHWs in order to assess their skills in infant nutrition and a check list reproduced from WHO guidelines (20) was utilized for the evaluation of growth charts (appendix VI).

The mother's questionnaire was concerned with the mother and child health related risk factors and indicators listed below and defined as necessary:

(a) Variables related to mothers:

- Age
- Marital Status - mothers were classified into 2 categories: mothers currently living with a supportive partner and mothers living without such a partner.
- Mothers Education - mothers were considered literate if they stated that they were able to read and write a single message.
- Mothers Occupation - mothers were considered to work outside the home if they did so on a day-to-day regular basis. Any household chores done outside the home were not so considered.
- Previous Live Births.
- Number of Living Children.

(b) Variables related to the Family:

- Family Composition.
- Family Income - the total income of all working members of the family was recorded as given by the mothers. That family income was converted into U.S. dollars, according to current exchange rates. Then, the amount obtained was divided by the total number of members of the family. This yielded a family income per capita that was used in the study analysis(42).
- Family Mobility - Mothers who affirmed that they had been living at their present address for less than 2 years were asked about their previous place of residence.

(c) Variables related to Environment:

- Source of water/sanitation.

- Number of people per sleeping room - the total number of people living in the house was divided by the number of sleeping rooms.

(d) Participation of mothers in Nutrition Programmes - the regularity of attendance of mothers at weighing sessions and the number of eligible children participating in food supplementation programmes were determined.

(e) Understanding of Growth charts by the Mothers - The mothers did an interpretation test of growth charts using a standard child's growth curve.

(f) Attitudes of mothers towards child nutrition - mothers were questioned on their opinions about the growth monitoring programme and their attitudes towards weighing well-nourished and malnourished children.

(g) Number and origin of Children's growth charts.

(h) Child morbidity - Information on incidence of diarrhoea among any children living in the household during the two week period preceding the interview was obtained, as well as any reported hospitalizations of their under-4 children in the previous 12 month period.

(i) Child mortality - Mothers were asked about any death of under-4 children which had occurred in their households in the 12 month period preceding the interview.

(j) Child immunization status - Children had their vaccination cards checked and they were classified into 2 categories according to whether or not they were appropriately immunized for their age.

(k) Childrens' nutritional status - Children who were 0-36 months old had their anthropometric measures (weight and length/height) taken by the interviewers. A SALT-like scale and an antrhopometer were

used for such purpose. The nutrition of these children was assessed through the weight for age, height for age and weight for height standards in percentil of the United States national Centre of Health Statistics (NCHS)(21, 35, 43).

The community health workers involved in the growth monitoring programme were asked to complete a self-completion questionnaire in order to assess their current infant nutrition skills.

The questions asked concerned the operationAL aspects of the programme, infant nutrition knowledge and growth chart interpretation test as listed below.

(a) Approach currently used to weigh children (community sessions, house-to-house weighing or both of them).
(b) Advice most/least often given to programme participant mothers.
(c) Management of malnourished children.
(d) Appropriate infant diets.
(e) Reasons why mothers do not participate in the programme.
(f) Interpretation of child growth curves.

In the present study only data referring to nutritional advice and the reasons for non-participant are being analysed.

The check list utilized to evaluate the appropriate use of growth charts in the study area was obtained from guide-lines produced by the Maternal and Child Health Unit of the Word Health Organisation (WHO) for this purpose.

After three interviewers (1 doctor and 2 nurses) had been appointed to administer the questionnaires, a pilot study was carried out. This

study consisted of the interview of 8 mothers in a slum located on the outskirts of Fortaleza. As a result some sections of the original questionnaire, such as those related to mother's attendance at weighing sessions and mother's occupation, had to be restructured.

The response rate to the questionnaires was 100% as none of the mothers refused to be interviewed. However one mother would not agree to having her children weighed.

5.4 DATA ANALYSIS.

Data was analysed in the Computer Centre of the University of London through the package Statistical Analysis System (SAS).

The Chi-square test was used to determine statistical significance, and 5% was considered the minimum acceptable level of significance. The Yates Correction was used where necessary (22, 34).

SOME SOURCES OF BIAS AND STUDY LIMITATIONS:

- The interviewers were introduced to the mothers as health workers and this could have induced them to give favourable responses.
- Mothers who were not at home were promptly substituted. Therefore, it is likely that some working mothers were excluded from this study.
- The calculation of some relevant indices was not possible as denominator data were not properly collected. (e.g. the number of households with children with diarrhoea in the preceding two weeks was collected rather than the actual number of children with diarrhoea).

6 - RESULTS

Results of this study are presented as follows:

Firstly, some relevant socio-economic characteristics of the mothers and children involved in this study are shown in the section Study Population Characteristics. Next, in the section "Patterns of participation of mothers in the growth monitoring programme" the levels of attendance of mothers at the programme's weighing sessions are analysed. In this same section, the reasons for non-attendance according to the mothers and the CHWs are described. Also the relation between distance from weighing places and attendance at weighing sessions, the mother's appreciation of the programme's significance; the mother's increased awareness resulting from the programme; recall by motherrs programmes health messages and the mothers' attitudes towards child nutritional status are subjects analysed in this section.

Afterwards, in the third section, the nutritional status of the children is assessed according to their participation or otherwise in the programme. In the fourth section vital educational and socio-economic characteristics of growth monitoring programme participant and non-participant mothers are described and compared.

Finally, in the fifth and last section, the mothers' use of the child health services in relation to their participation or otherwise in the growth monitoring programme as well as some relevant indicators of child health are analysed.

6. RESULTS

6.1 STUDY POPULATION CHARACTERISTICS

6.1.2 MOTHERS' FEATURES.

A sample of 202 mothers living in either peripheral urban and rural communities was randomly selected. Twenty-eight (13.9%) mothers were below 20 years of age, 141 (69.8%) were 20-35 years old and 33 (16.3%) were older than 35 years of age. The great majority of these mothers 161 were married or had a supportive partner. 41 (20.3%) were either single or at the time of the interview were living without a partner. High illiteracy was found among mothers as 82 (40.8%) of them were illiterate. 119 (59.2%) were considered literate as they were able to read and write a simple message. Of all mothers, 40 (19.8%) had never attended school, 79 (39.1%) had only 1-2 years of schooling, 51 (25.7%) had completed the first 4 years at the primary school, but none had ever attended high school. Most of the mothers, 186 (88.6%) worked at home doing household chores. Only 16 (7.9%) mothers were found to work outside the home and 7 (3.5%) claimed to be unemployed at the time of the interview.

An average of 4.5 live births per mother was verified in the study sample. 142 (70.3%) of the mothers had had 5 or less live births and 60 (29.7%) had had more than five. At the time of the interview, 163 (80.7%) had 5 or less live children and 39 (19.3%) had more than 5 live children. The maximum number of children living with any one mother was fifteen. The large number of previous child deaths observed among these mothers reflects the high local mortality rates. 79 (39.1%) of mothers had already lost at least one child. Of these mothers, 36 (45.6%) had experienced a single child death, 20 (25.3%) two child deaths, 19 (24.1%) three to four child deaths and 4 (51.%) had lost 5 or 6 children!

6.1.2 FAMILY FEATURES

FAMILY SIZE:

An average family size of 5.2 persons was found. 94 (46.5%) of the families had 5 or less people and 108 (53.5%) had more than 5 people living together. The maximum family size was 9 people found in 12 (5.9%) of the households.

FAMILY INCOME:

Family income is a sensitive indicator of poverty. Indeed, the communities studied showed a striking degree of poverty as 64 (37.2%) of the families had a monthly per capita income of less than 6 U.S. dollars and 71 (41.3%) had 6 to 10 U.S. dollars of per capita income per month. Only 37 (21.5%) of the families had an income of more than 10 U.S. dollars per head. The maximum income limit found was 28 U.S. dollars per family member. Indeed, the regional minimum wage is currently 50 U.S. dollars. However, optimistic estimates have shown that a minimum wage of 150 U.S. dollars would be necessary to meet the basic needs of a family of 5 persons(37).

FAMILY MOBILITY:

Migration seems to be a common phenomenon as 62 (30.7%) of the families have been living in their present houses for less than 1 year, and 24 (11.9%) for 1 to 2 years. However, the usual practice is for families to move from one house to another within the same town. Moreover 52 of these families (61.2%) remained in the same neighbourhood. Only 22 (25.9%) moved from a different town.

6.1.3 HOUSING:

The great majority of the houses had walls as well as floors made from mud. 126 (64.4%) of the houses had up to 3 rooms. 57 (28.2%) had

4-5 rooms and 19 (9.4%) had 6 to 8 rooms. An average of 2.4 people per sleeping room was observed. As sleeping rooms are seldom larger than 6 m^2, even a normal ratio of 2 people per room may be considered excessive.

6.1.4 WATER/SANITATION:

Only 11 (5.4%) houses had an inside source of tap water. The main sources of water for these communities are public taps and wells. 81 (40.1%) of the mothers mentioned the former as their source of drinking water whereas 80 (39.6%) mentioned the latter. Purchased water and natural sources, like rivers, dams and ponds, were cited by 7 (3.5%) and 23 (11.4%) of the mothers respectively. The environment is supposed to be extremely contaminated as 113 (55.9%) of the houses have no toilet facilities and the faeces are disposed of in the open air. 41 (20.3%) had a VIP latrine and 48 (23.8%) had a flush toilet, although no public sewage system is provided in the area.

6.1.5 AGE OF CHILDREN:

A total of 291 0-4 year old children were identified in the survey. The age distribution was as follows:

0 - 6 months	-	57 (19.6%)
7 - 12 months	-	31 (10.6%)
13 - 24 months	-	91 (31.3%)
25 - 36 months	-	76 (26.1%)
35 - 48 months	-	36 (12.4%)

6.1.6 GROWTH CHARTS:

The absolute majority (95.9%) of the 291 children involved in the study had growth charts. Moreover, 64 (22.0%) of the children had two and 9 (3.1%) of them had 3 growth charts. However, 80 (22.2%) of the 361

growth charts seen had never been used. Only 8 (2.1%) of all the growth charts requested to be seen were reported lost by the mothers and 11 (2.8%) were not at home.

6.2 PATTERN OF PARTICIPATION OF MOTHERS IN THE GROWTH MONITORING PROGRAMME

ATTENDANCE AT WEIGHING SESSIONS

TABLE 4

MOTHERS ATTENDANCE AT GROWTH MONITORING PROGRAMME'S WEIGHING SESSIONS, ACCORDING TO RURAL AND URBAN LOCATION

ATTENDANCE / LOCATION	REGULARS No. (%)	IRREGULARS No. (%)	DROP--OUTS No. (%)	NON-ATTENDERS No. (%)	TOTAL No. (%)
URBAN	21 (32.8)	16 (25.0)	7 (10.9)	20 (31.3)	64 (31.7)
RURAL	63 (45.6)	43 (31.2)	9 (6.5)	23 (16.7)	138 (68.3)
TOTAL	84 (41.6)	59 (29.2)	16 (7.9)	43 (21.3)	202 (100.0)

Urban mothers showed a lower level of participation than rural mothers. The prevalence of non-attender mothers in urban areas (31.3%) was almost double that verified in rural areas (16.7%).

As an overall picture, 70.8% of the mothers interviewed were programme participants (Regular plus Irregular attenders), while 29.2% were non-participants (dropouts plus non-attenders).

TABLE 5.

TOTAL No. OF WEIGHING SESSIONS (W.S.) ATTENDED FROM JANUARY TO SEPTEMBER 1988 BY NO. OF MOTHERS, ACCORDING TO LEVEL OF ATTENDANCE

ATTENDANCE	REGULARS	IRREGULARS	DROP-OUTS	NON-ATTENDERS
NO. OF W.S. ATTENDED	500	222	39	0
NO. OF MOTHERS	84	59	16	43
AVERAGE NO. SESSIONS/ MOTHER	5.9	3.8	2.4	0

* OBS: Weighing sessions are carried out monthly.

In the 9 month period analysed regular participant mothers attended, on average, 6 weighing sessions, whereas Irregular participants attended 4 of them.

TABLE 6.

MOTHER'S PERSONAL REASONS FOR NOT ATTENDING WEIGHING SESSIONS COMPARED TO CHWs VIEW OF WHY MOTHERS DO NOT ATTEND WEIGHING SESSIONS*

REASONS FOR NON-ATTENDANCE	
MOTHERS	CHWs
1 - EXCLUSION FROM THE PROGRAMME (35.9%) - We were never invite - We don't know about WS - We were no longer told to come	1 - MOTHERS DO NOT PERCEIVE BENEFITS (83%) - Lack of interest - Weighing is not important - There is no advantage in weighing
2 - MOTHER'S PERSONAL CIRCUMSTANCES (25.6%) - We cannot come in the morning/afternoon - We work outside home.	2 - MOTHER'S PERSONAL CIRCUMSTANCES (42.5%) - Work out of home - Have no time available - No caretakers for other children
3 - MOTHERS DO NOT PERCEIVE BENEFITS (18%) - We don't think weighing is important - We don't like weighing - We are not motivated to come to weighing sessions.	3 - EXPECTATIONS NO MET (36.2%) - Food - Medicines - Medical consultations are not provided
4 - CHILDREN CONSTRAINTS (11.5%) - Children always sick - Children would cry too much - Children are in day care	4 - ACCESS CONSTRAINTS (27.6%) - They live far away - They have to walk a lot - Distance
5 - WEIGHING SESSION CONSTRAINTS (4%) - Meet people who we don't want to meet - CHWs say children are not properly looked after	5 - MOTHER'S FAULT (23.4%) - They don't properly look after children - They are lazy - They are forgetful
6 - EXPECTATIONS NOT MET (2.6%)	
7 - MOTHER'S FAULT (2.6%)	

* Mothers were asked to give the single most important reason. CHWs gave more than one reason.

Mother and CHWs disagree on the reasons for non-attendance. Some of the reasons mentioned by mothers, like "exclusions from the program", "children constraints" and "weighing sessions constraints", were not cited by the CHW. Similarly, CHWs mentioned "access constraints" as a reason and mothers did not. In addition, there is a great discrepancy in the percentages of mother and CHWs giving similar reasons. For example, 83% of the CHWs cited that mother's perceived no benefits from the programme as a reason for non-participation whereas only 18% of mothers gave this as a reason.

6.2.2 DISTANCE TO WEIGHING PLACES.

TABLE 7.

APPROXIMATE DISTANCE IN METERS FROM MOTHERS HOME TO WEIGHING PLACES, ACCORDING TO MOTHERS PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

DISTANCE / PARTICIPATION	≤ 200m NO.	≤ 200m (%)	> 200m NO.	> 200m (%)
PARTICIPANT	90	(62.9)	53	(37.1)
NON-PARTICIPANT	49	(83.1)	10	(16.9)
TOTAL:	139	(68.8)	63	(31.2)

$x^2=7.873$; DF=2; P <0.01

More non-participant mothers live within a range of 200 meters from the weighing places than participant mothers. In addition non-participant mothers living within this distance make up a high proportion (83.1%) of the total number of mothers in this group.

MOTHER'S VIEW OF THE USEFULNESS OF THE GROWTH MONITORING PROGRAMME.

TABLE 8.

Mother's view of the usefulness of monthly weighing sessions and their participation in the growth monitoring programme.

STATEMENT	USEFUL ≤ 5		NOT USEFUL 6 - 10		DO NOT KNOW ≥ 10	
PARTICIPATION	NO.	(%)	NO.	(%)	NO.	(%)
PARTICIPANTS	124	(86.7)	4	(2.8)	15	(10.5)
NON-PARTICIPANTS	46	(78.0)	12	(20.3)	1	(1.7)
TOTAL	170	(84.2)	16	(7.9)	16	(7.9)

A similarly high proportion of participant and non-participant mothers answered that weighing children regularly was useful. Interestingly, 10% of the mothers participating in the programme were not able to answer the question.

In the following table the reasons why mothers thought weighing children regularly is important are listed. About three quarters of the mothers in both participant and non-participant groups did not see any other benefit apart from watching the child's weight. 13.2% of the participant mothers associated this process with the health status of children and 7.1% of them associated it with children's growth and development. Only 5% of participant mothers answered they could take some benefit in relation to child feeding practices when weighing children regularly.

TABLE 9.

MOTHERS' REASONS WHY THEY SHOULD WEIGH CHILDREN REGULARLY, ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

PARTICIPATION / REASONS	PARTICIPANT NO.	PARTICIPANT (%)	NON-PARTICPNT. NO.	NON-PARTICPNT. (%)
- To watch the child's weight: (To find out if weight is normal, or if the child has lost or gained weight	77	(68.1)	30	(73.2)
- To find out whether the child is healthy or ill	15	(13.2)	3	(7.3)
- To know if child growing/developing properly	8	(7.1)	3	(7.3)
- To know if the child is well nourished or overweight	7	(6.2)	2	(4.9)
- To care for/feed the child better	5	(4.4)	1	(2.4)
- To find out whether feeding is adequate	1	(0.9)	0	(0.0)
- To receive food or medicines	0	(0.0)	2	(4.9)
TOTAL	113	(100.0)	41	(100.0)

ASSIMILATION OF HEALTH AND NUTRITIONAL ADVICE.

TABLE 10.

ADVICE GIVEN DURING WEIGHING SESSIONS RECALLED BY MOTHERS, ACCORDING TO THE PROGRAMME ATTENDANCE.

ATTENDANCE / ADVICE	REGULARS (n=84) NO. (%)	IRREGULARS (n=59) NO. (%)	TOTAL (n=143) NO. (%)
DIARRHOEA/ORT	42 (50.0)	25 (42.4)	67 (46.8)
CHILD IMMUNIZATION	35 (41.7)	20 (33.9)	55 (38.5)
BREAST FEEDING	26 (30.9)	8 (13.6)	34 (23.8)
CHILD FEEDING	21 (25.0)	13 (22.0)	34 (23.8)
CHILD GROWTH/ DEVELOPMENT	15 (17.9)	2 (3.4)	17 (11.9)

Advice on infant diarrhoea/ORT and immunization, provided during weighing sessions, was recalled by 46.8% and 38.5% of programme participant mothers respectively. Meanwhile advice on child nutrition was recalled by less than one fourth of mother participating in the growth monitoring programme.

These results match with those observed for the CHWs involved in the programme when they were similarly assessed on advice given during weighing sessions. In a list of 6 child health messages, diarrhoea management/ORT and immunization were mentioned by CHWs as the most

frequent messages given, whereas advice on child diets and catch up growth were the least cited.

6.2.4 UNDERSTANDING OF GROWTH CHARTS

Mothers were asked to interpret a child's growth curve (see Appendix IV) in order to assess their understanding of growth charts.

TABLE 11.

MOTHERS INTERPRETATION OF GROWTH CHART TEST ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

INTERPRETATION	CORRECT		INCORRECT OR UNABLE TO INTERPRET	
PARTICIPATION	NO.	(%)	NO.	(%)
PARTICIPANTS	16	(11.2)	127	(88.8)
NON-PARTICIPANTS	6	(10.2)	53	(89.8)
TOTAL:	22	(10.9)	180	(89.1)

(P not significant)

Only 10.9% of mothers were able to correctly interpret the growth chart test (see Appendix IV). Of the 22 mothers who gave the correct answer and explained it, 7 had 1 or 2 years of schooling and 16 had more than 2 years. No illiterate mother was able to give the test's correct answer.

Interestingly the percentage of mothers who correctly interpreted the growth chart test was quite similar in both participant (11.2%) and

non-participant groups (10.2%). However the proportion of mothers who tried to interpret the growth chart, whatever the answer given, was greater in the participant (52.4%) than in the non-participant group (28.8%) ($p < 0.01$). Fifty-four percent of all the mothers in the study did not try to answer the question.

6.2.5 ATTITUDE OF MOTHERS TOWARDS CHILD NUTRITIONAL STATUS.

A picture of two children (see Appendix V), one well nourished and another under-nourished, was shown to mothers and the following question was asked: "If you had two children like that, one fat and another thin, and you could take only one of them to the weighing session, which one would you take?"

TABLE 12.

MOTHERS WHO WOULD TAKE WELL/UNDER-NOURISHED CHILD TO WEIGHING SESSION ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

ATTITUDE / PARTICIPATION	WOULD TAKE WELL NOURISHED CHILD		WOULD TAKE UNDER-NOURISHED CHILD	
	NO.	(%)	NO.	(%)
PARTICIPANTS	34	(25.3)	107	(74.7)
NON-PARTICIPANTS	8	(15.1)	45	(84.9)
TOTAL:	42	(21.6)	152	(78.4)

(P not significant)

Twenty-two percent of the mothers answered they would take the well nourished child instead of the under-nourished one. There was not a statistically significant difference between the groups of participant and non-participant mothers.

The reasons given by mothers for preferring to take the fat or the thin baby to the weighing session are listed below:

TABLE 13.

MOTHERS REASONS FOR TAKING:	
THE FAT/WELL-NOURISHED BABY	THE THIN/UNDER-NOURISHED BABY
He (the baby) is prettier.	He look sick.
She (the mother) would be criticized if she took the thin baby.	He is more in need.
She would take the thin baby only when he gets fat.	She would want to know what was wrong with him.
She would be ashamed taking the thin baby.	It is more important to know the weight of the thin child.
The fat one weighs more/ the thin one weighs almost nothing.	He is lighter/easier to carry.
The fat baby looks healthier.	

6.3 CHARACTERISTICS OF GROWTH MONITORING PROGRAMME PARTICIPANT AND NON-PARTICIPANT MOTHERS.

6.3.1 MOTHER'S AGE

TABLE 14.

MOTHERS AGE DISTRIBUTION ACCORDING TO LEVEL OF ATTENDANCE AT WEIGHING SESSIONS.

ATTENDANCE	AGE GROUP	≤ 19		20 - 35		> 35	
		NO.	(%)	NO.	(%)	NO.	(%)
PART-ICIPANTS	REGULARS	7	(8.3)	61	(72.6)	16	(19.0)
	IRREGULARS	11	(18.6)	40	(67.8)	8	(13.6)
NON-PART-ICIPANTS	DROPOUTS	3	(18.8)	11	(68.7)	2	(12.5)
	NON-ATTEND-ERS	7	(16.3)	19	(67.4)	7	(16.3)
	TOTAL:	28	(14.6)	131	(68.2)	33	(17.2)

(P not significant)

There is no statistically significant difference in the numbers of participant and non-participant mothers, according to the three age groups analysed: teenage, 20-35 and above 35 years of age. However, when the levels of attendance are separately analysed, a greater difference may be observed among teenage mothers. Only 8% of the regularly attending mothers are teenagers, while on average, 17.9% of the irregular, dropout of non-participant mothers belong to that age group.

Nevertheless, when x^2 test was used, this difference was not shown to be significant (x^2 = 3.680), although it approximated closely to the 5% level of significance.

6.3.2 - MOTHER'S EDUCATION:

TABLE 15.

MOTHERS LITERACY ACCORDING TO PARTICIPATION OR NOT IN THE GROWTH MONITORING PROGRAMME.

LITERACY / PARTICIPATION	ILLITERATE NO. (%)	LITERATE NO. (%)
PARTICIPANT	52 (36.4)	91 (63.6)
NON-PARTICIPANT	30 (51.7)	28 (48.3)
TOTAL:	82 (40.8)	119 (59.2)

x^2=4.03; DF=2; P <0.05

More non-participant mothers are illiterate (51.7%) as compared with participant mothers (36.4%). As the following table shows, this difference is even enhanced when the group of regular and non-attender mothers are compared. 32.1% are illiterate in the former group against 59.5% in the latter.

TABLE 16.

MOTHERS LITERACY ACCORDING TO ATTENDANCE TO WEIGHING SESSIONS.

LITERACY / ATTENDANCE	ILLITERATE NO. (%)	LITERATE NO. (%)
REGULARS	27 (32.1)	57 (67.9)
NON-ATTENDERS	25 (59.5)	17 (40.5)

$x^2=8.66$; DF=2; P <0.01

TABLE 17.

MOTHERS WITH NO DEAD CHILD AND WITH ONE OR MORE DEAD CHILD, ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

DEATHS / PARTICIPATION	NO CHILD DEATHS NO. (%)	AT LEAST ONE CHILD DEATH NO. (%)
PARTICIPANT	94 (65.7)	49 (34.3)
NON-PARTICIPANT	24 (49.1)	30 (50.9)
TOTAL:	123 (60.9)	79 (39.1)

$x^2=4.822$; DF=2; P <0.05

More mothers in the non-participant group (50.9%) had already experienced child deaths than participant mothers (34.3%). When child deaths were analysed by level of attendance a certain association between these two variables was observed. As shown in the following Table the number of child deaths increases as the level of attendance decreases.

TABLE 18.

TOTAL NUMBER OF CHILD DEATHS BY NUMBER OF MOTHERS, ACCORDING TO LEVEL OF ATTENDANCE AT THE GROWTH MONITORING PROGRAMME.

ATTENDANCE	REGULARS	IRREGULARS	DROPOUTS	NON-ATTENDERS
NO. OF DEAD CHILDREN	43	54	16	52
NO. OF MOTHERS	84	59	16	43
AVERAGE NO. OF DEATHS/ MOTHERS	0.5	0.9	1.0	1.2

TABLE 19.

FAMILY INCOME PER CAPITA (US$), ACCORDING TO MOTHERS' LEVEL OF ATTENDANCE AT THE WEIGHING SESSIONS.

INCOME / ATTENDANCE	≤ 5 NO. (%)	6 - 10 NO. (%)	> 10 NO. (%)
REGULARS	28 (37.8)	31 (41.9)	15 (20.3)
IRREGULARS	17 (35.4)	21 (43.7)	10 (20.8)
DROPOUTS	4 (28.6)	7 (50.0)	3 (21.4)
NON-ATTENDERS	15 (41.7)	12 (33.3)	9 (25.0)
TOTAL:	64 (37.2)	71 (41.3)	37 (21.5)

(P not significant)

The approximate monthly family income of 172 mothers (85% of the total sample) was obtained. Thirty mothers were not able to state the current income of the whole family living in the same household with acceptable accuracy.

For the 3 classes of income analysed the percentage of mother falling within each attendance group was fairly similar. The x^2 test showed no significant difference between the participant and non-participant group of mothers.

6.4 NUTRITIONAL STATUS OF CHILDREN:

6.4.1 WEIGHT FOR AGE:

TABLE 20.

NUTRITIONAL STATUS OF UNDER 3 CHILDREN ACCORDING TO NCHS* WEIGHT/AGE STANDARD IN PERCENTILE, BY LEVEL OF ATTENDANCE AT WEIGHING SESSIONS.

PERCENTILE / PARTICIPATION	≤ 3		3rd - 10th		≥ 10th	
	NO.	(%)	NO.	(%)	NO.	(%)
REGULARS	17	(17.5)	17	(17.5)	63	(65.0)
IRREGULARS	17	(23.3)	11	(15.1)	45	(61.6)
DROPOUTS	6	(30.0)	1	(5.0)	13	(65.0)
NON ATTENDERS	12	(21.8)	8	(14.5)	35	(63.6)
TOTAL	52	(21.2)	37	(15.1)	156	(63.7)

A total of 245 under-3 children had their nutritional status assessed. A high proportion of children (36.3%) in the study area were found to be mildly to severely underweight, below the 10th percentile wt/age. No statistically significant difference between children of Growth Monitoring programme non-participant mothers and children of participant mothers was detected. In fact, as the following Table shows, the percentages for both groups were very similar: 36.5% for participants and 36.0% for non-participants.

* NCHS - National Center of Health Statistics (USA).

TABLE 21.

NUTRITIONAL STATUS OF UNDER-3 CHILDREN ACCORDING TO NCHS WT/AGE STANDARD, BY THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

PERCENTILE / PARTICIPATION	< 10th NO.	< 10th (%)	> 10th NO.	> 10th (%)
PARTICIPANTS	62	(36.5)	108	(63.5)
NON-PARTICIPANTS	27	(36.0)	48	(64.0)
TOTAL:	89	(36.3)	156	(63.7)

(P not significant)

6.4.2 HEIGHT FOR AGE:

TABLE 22.

NUTRITIONAL STATUS OF UNDER-3 CHILDREN ACCORDING TO NCHS HEIGHT FOR AGE STANDARD IN PERCENTILE, BY LEVEL OF ATTENDANCE AT WEIGHING SESSIONS.

PERCENTILE / ATTENDANCE	< 3		3rd-10th		>10th	
	NO.	(%)	NO.	(%)	NO.	(%)
REGULAR	38	(39.2)	15	(15.5)	44	(45.4)
IRREGULAR	31	(42.5)	11	(11.3)	31	(42.5)
DROPOUTS	8	(40.0)	3	(15.0)	9	(45.0)
NON-ATTENDERS	30	(54.5)	8	(14.5)	17	(30.1)
TOTAL	107	(43.6)	37	(15.1)	101	(41.2)

As an overall picture, 58.7% of the children were found to be mildly to severely stunted, i.e. below the 10th percentile height for age. As the following Table shows, the growth monitoring participant and non-participant children were compared and the x^2 test applied. However, the difference of 9.4% between the groups was not found to be statistically significant.

TABLE 23.

NUTRITIONAL STATUS OF UNDER-3 CHILDREN ACCORDING TO NCHS HEIGHT FOR AGE STANDARD, BY THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

PERCENTILE / PARTICIPATION	< 10th		> 10th	
	NO.	(%)	NO.	(%)
PARTICIPANTS	95	(55.9)	75	(44.1)
NON-PARTICIPANTS	49	(65.3)	26	(34.7)
TOTAL:	144	(58.8)	101	(41.2)

(P not significant)

6.4.3 WEIGHT FOR HEIGHT:

TABLE 24.

NUTRITIONAL STATUS OF UNDER-3 CHILDREN ACCORDING TO NCHS WEIGHT/HEIGHT STANDARD IN PERCENTILE, BY LEVEL OF ATTENDANCE

PERCENTILE / PARTICIPATION	< 3rd NO. (%)	3rd - 10th NO. (%)	≥ 10th NO. (%)
REGULARS	2 (2.1)	8 (8.2)	87 (89.7)
IRREGULARS	1 (1.4)	4 (5.5)	68 (93.2)
DROPOUTS	0 (0.0)	1 (5.0)	19 (95.0)
NON ATTENDERS	6 (10.9)	0 (0.0)	49 (89.1)
TOTAL	9 (3.7)	13 (5.3)	223 (91.0)

(P not significant)

Nine percent of all the under-3 children in the study were mildly to severely wasting, below the 10th percentile weight for height. Again no statistically significant difference was found among growth monitoring participant and non-participant children as shown in the following Table.

TABLE 25.

NUTRITIONAL STATUS OF UNDER-3 CHILDREN ACCORDING TO NCHS WEIGHT FOR HEIGHT STANDARD, BY THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

PERCENTILE / PARTICIPATION	< 10th		≥ 10th	
	NO.	(%)	NO.	(%)
PARTICIPANTS	15	(8.8)	155	(91.2)
NON-PARTICIPANTS	7	(9.3)	68	(90.7)
TOTAL:	22	(9.0)	223	(91.0)

(P not significant)

6.5 UTILIZATION OF CHILD HEALTH RESOURCES AND HEALTH STATUS OF CHILDREN.

6.5.1 PARTICIPATION IN FOOD SUPPLEMENTATION PROGRAMS:

TABLE 26.

MOTHERS WHO HAVE CHILDREN PARTICIPATING IN FOOD SUPPLEMENTATION PROGRAMS (FSP), ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAM (GMP).

FSP PARTICIPATION / GMP PARTICIPATION	FSP NON-PARTICIPANTS		FSP PARTICIPANTS	
	NO.	(%)	NO.	(%)
PARTICIPANT	24	(16.8)	119	(83.3)
NON-PARTICIPANT	23	(39.0)	36	(61.0)
TOTAL:	47	(23.3)	155	(76.7)

$x^2=11.529$; DF=2; $P \leq 0.001$

Of the total of mothers 23.3% had eligible children, but they were not participating in any one of the three available governmental food supplementation programs operating in the area. 39% of growth monitoring programme non-participant mothers also do not participate in the FS programmes against only 16.8% of mothers in the growth monitoring programme participant group.

6.5.2 INFANT DIARRHOEA

TABLE 27.

MOTHERS WITH CHILDREN SUFFERING OR NOT FROM DIARRHOEA*, ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

DIARRHOEA INCIDENCE / PARTICIPATION	CHILD(REN) WITH DIARRHOEA NO. (%)	NO CHILD WITH DIARRHOEA NO. (%)
PARTICIPANT	53 (37.1)	90 (62.9)
NON-PARTICIPANT	20 (33.9)	39 (66.1)
TOTAL:	73 (36.1)	129 (63.9)

* during the preceding two week period (P not significant)

The incidence of infant diarrhoea seems to be fairly similar in the participant and non-participant groups of children. However, as information on diarrhoeal attacks for individual children within the family was not collected, it is not possible to calculate incidence rates. 37.1% of participant mothers stated that at least one of their children had had diarrhoea in the 2 week period preceding the interview, as compared with 33.9% of mothers in the non-participant group. No statistically significant difference between the two groups was detected when the x^2 test was used.

6.5.3 USE OF ORS DURING RECENT DIARRHOEAL EPISODES.

TABLE 28.

THE USE OF ORS DURING RECENT* INFANT DIARRHOEA EPISODES, ACCORDING TO MATERNAL PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

ORS USAGE	USED ORS		DID NOT USE ORS	
PARTICIPATION	NO.	(%)	NO.	(%)
PARTICIPANT	24	(46.2)	28	(53.8)
NON-PARTICIPANT	5	(25.0)	15	(75.0)
TOTAL:	29	(40.3)	43	(59.7)

* During the preceding two week period. (P not significant)

Mothers who affirmed that any of their children had had diarrhoea in the established period were asked whether or not they had administered Oral Rehydration Solution during the diarrhoeal episodes. Only 25% of mothers in the non-participant group had used oral rehydration therapy against 46.2% in the participant group. However, this difference of 21.2% between the 2 groups was not shown to be statistically significant when the x^2 test was used, probably due to the small number (72) of mothers who reported diarrhoeal episodes among their children.

REGULAR USE OF ORS:

TABLE 29.

FREQUENCY OF ORS USAGE BY GROWTH MONITORING PROGRAMME PARTICIPANT AND NON-PARTICIPANT MOTHERS.

FREQUENCY / PARTICIPATION	ALWAYS NO. (%)	SOMETIMES NO. (%)	NEVER NO. (%)
PARTICIPANTS	79 (56.0)	43 (30.5)	19 (13.5)
NON-PARTICIPANTS	12 (21.0)	19 (33.3)	26 (45.6)
TOTAL	91 (38.5)	62 (31.9)	45 (29.5)

x^2= 23.873; DF=2; P <0.001

A remarkable difference was verified in the frequency of ORS usage between participant and non-participant mothers. 56.0% of mothers of the participant group stated that they always used ORS during infant diarrhoea episodes, whereas only 21.0% of mothers in the non-participant group did so. Mother who use ORS (always plus sometimes) were analysed for significance with those who never use it. As a result, a highly significant difference (p <0.001) was observed between the participant and non-participant group of mothers.

IMMUNIZATION STATUS.

TABLE 30.

CHILDREN APPROPRIATELY OR NOT IMMUNIZED FOR THEIR AGES, ACCORDING TO THEIR ATTENDANCE AT WEIGHING SESSIONS.

IMMUNIZATION / ATTENDANCE	APPROPRIATELY IMMUNIZED		NOT APPROPRIATELY IMMUNIZED	
	NO.	(%)	NO.	(%)
REGULARS	73	(70.9)	30	(29.1)
IRREGULARS	38	(45.8)	45	(54.2)
DROPOUTS	11	(45.8)	13	(54.2)
NON-ATTENDERS	13	(22.8)	44	(77.2)
TOTAL:	135	(50.6)	132	(49.4)

A high percentage (70.9%) of children of growth monitoring programme participant mothers are appropriately immunized for their age as compared to children of non-participant mothers (22.8%).

The following Table shows that when mothers with all their children appropriately immunized and mothers with at least one child not appropriately immunized are compared, the difference between the participant and non-participant group still remains significant ($P < 0.001$). 59.7% of mothers had all their children appropriately immunized for their age in the participant group against a mere 24.6% in the non-participant group.

TABLE 31.

MOTHERS WITH ALL THEIR CHILDREN APPROPRIATELY IMMUNIZED AND MOTHERS WITH AT LEAST ONE CHILD NOT APPROPRIATELY IMMUNIZED, BY THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

IMMUNIZATION	ALL CHILDREN IMMUNIZED		NOT ALL CHILDREN IMMUNIZED	
PARTICIPATION	NO.	(%)	NO.	(%)
PARTICIPANTS	83	(59.7)	56	(40.3)
NON-PARTICIPANTS	14	(24.6)	43	(75.4)
TOTAL:	94	(49.5)	99	(50.5)

$x^2 = 19.980$; DF=2; $p < 0.001$

6.5.5 CHILDREN HOSPITALIZATIONS:

TABLE 32.

MOTHERS WITH HOSPITALIZED CHILDREN DURING THE PRECEDING 12 MONTHS PERIOD*, ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

HOSPITALIZATION / PARTICIPATION	HOSPITALIZED CHILDREN		NON-HOSPITALIZED CHILDREN	
	NO.	(%)	NO.	(%)
PARTICIPANTS	12	(8.4)	131	(91.6)
NON-PARTICIPANTS	13	(22.0)	46	(78.0)
TOTAL:	25	(12.4)	177	(87.6)

* - From Aug 87 to Aug 88 $x^2=7.168$; DF=2; $P<0.01$

Twenty five out of the 202 mothers interviewed had had one under 4 year old child admitted to hospital in the prescribed period and one mother had had 2 children hospitalized. On the whole 26 children out of the study sample of 291 under-4 children had been hospitalized. This accounts for an admission rate of 8.9%. However, these numbers become more interesting when they are analysed separately according to mother's participation in the growth monitoring programme. 22% of mothers in the non-participant group had children hospitalized, whereas only 8.4% of mothers did in the participant group ($P < 0.01$). Hospitalization incidence rates of 155/1000 and 60/1000 were verified for the non-participant and participant groups of children respectively. The reasons for hospitalization reported by the mothers were the following:

- Respiratory infection: 11
- Diarrhoea/dehydration: 10
- Malnutrition: 2
- Fever/convulsions: 2
- Measles: 1

Eighteen hospitalization were reported among children from rural areas and 8 among children from urban areas.

6.5.6 CHILD DEATHS.

TABLE 33.

MOTHERS WITH ONE UNDER-4 CHILD DEATH IN THE PRECEDING 12 MONTH PERIOD* ACCORDING TO THEIR PARTICIPATION IN THE GROWTH MONITORING PROGRAMME.

DEATHS / PARTICIPATION	CHILD DEATHS NO.	CHILD DEATHS (%)	NO CHILD DEATHS NO.	NO CHILD DEATHS (%)
PARTICIPANTS	2	(1.4)	141	(98.6)
NON-PARTICIPANTS	7	(11.8)	52	(88.1)
TOTAL:	9	(4.5)	193	(95.5)

*From Aug 87 to Aug 88. $x^2=8.429$; DF=2; $P<0.01$

A total of 9 deaths of under-4 children were reported, 7 by non-participant and 2 by participant mothers. The x^2 test with Yate's correction was applied, showing a statistically significant difference ($P < 0.01$) death rates for participant and non-participant groups of mothers were 1/71.5 and 1/8.4. respectively. There were 7 infant deaths (children under 1 year of age) giving an infant mortality rate of 79/1000.

The causes of deaths as reported by the mothers were:

- Diarrhoea/dehydration: 5
- Respiratory infection: 1
- Measles: 1
- Neonatal tetanus: 1
- Unknown 1

The distribution of deaths according to rural/urban location were as follows:

children of participant mothers:	1 rural
	1 urban
children of non-participant mothers:	3 rural
	1 urban

7. DISCUSSION

The peculiar characteristics of the community-based growth monitoring programme investigated in the present study offers an unusual opportunity of analysing certain aspects of the participation of mothers in health related activities. As the programme only provides child weighing and health education, mothers are not lured into participating by the promise of extra benefits, such as food supplements, medicines, or medical consultations. These benefits often constitute the main reason for mothers participating in certain programmes, so that the main purpose is often ignored. In this particular programme, the mothers' only interest is watching their child's growth, and participation results from their desire to do so.

7.1 PARTICIPATION OF MOTHERS IN THE GROWTH MONITORING PROGRAMME

The participation of 70% of the mothers with eligible children living in the programme coverage areas may be considered satisfactory, especially when compared with coverage rates observed in some programmes worldwide. For the ICDS* programme in India, in which children are weighed in community sessions or at home, a coverage of 50% of the 0-3 years old children was considered "good"(23).

In this present study, however, when the levels of attendance were analysed it was found that only 41.6% of the children had been weighed on a regular basis. This attendance rate is slightly lower than that verified in the UPGK** programme in Indonesia where, on average, 50% of the children enrolled had been weighed every month(24).

The number of dropouts was relatively low (7.9%). However mothers that have moved away from the programme areas are excluded from this

* - ICDS - Integrated Child Development Services.
** - UPGK - Indonesian Family Nutrition Improvement Programme.

number. Family mobility is likely to account for significant losses in programme participants and this was seen to be a real problem in the area studied. For instance, 30.7% of the families enrolled in this study had been living in their present homes for less than 1 year. In a community study in an urban area in London, Zinkin showed that families who move most often may contain a high proportion of high-risk children(1). Therefore, it appears that such children who are in great need of health care, are those less likely to go on participating in the programme.

The prevalence of non-attenders (mothers who never attended any weighing session(was, interestingly, substantially higher in urban (31.3%) than in rural (16.7%) areas. Community Health Workers long ago identified the problem of poor attendance at weighing sessions of mothers living in peripheral urban areas. Thus in such areas they decided to change the then current programme weighing approach to community sessions, to a house-to-house weighing approach. This should theoretically increase the mothers participation. Nevertheless, the problem still appears to persist.

Besides serious poverty, many poor urban mothers face a series of social problems, such as violence, lack of family bonds or living in illegal settlements, which rural mothers do not usually have to cope with(40). This is likely to cause urban mothers to be less willing to participate in community activities than rural mothers.

Community Health Workers are able to identify the non-compliant mothers whom they often call "difficult" mothers. Interestingly, they usually avoid maintaining contact with such mothers instead of trying to approach them and to encourage them to participate in community activities. Often CHWs and "difficult" mothers do not understand each

other, but in many cases not even a single contact has ever occurred between them. It is just a matter of pre-conceived ideas.

When interviewing mothers in the Jangurussú slum I was advised by the CHW, who was accompanying me, not to visit a certain house, that, according to the study's sampling procedures, I had to visit, because a "difficult" mother lived in this house and the CHW was afraid that I would be made unwelcome. Outside the house we could hear the mother shouting continuously at her children. I decided to go ahead and once inside the poor house we were welcomed by the mother and her drunk husband in a very friendly manner. She was 27 years old, but looked at least 10 years older and the mother of 3 children, two of which were under 3 years of age. The mother was so concerned to welcome us properly, as she said, she seldom had the chance to get visitors at home.

It was difficult to proceed with the interview as her husband insisted in interfering with her answers and she went on shouting at the children, with even more vigour. However at the end of the interview an authentic profile of a high-risk family could be seen: an illiterate mother with a barely cooperative partner, 2 previous child deaths and two under three undernourished children. These under 3 children were neither appropriately immunized nor registered for one of the 3 food supplementation programmes available in the area. The youngest was reported to have suffered repeated diarrhoea attacks but the mother stated that she did not believe that Oral Rehydration Solutions was as effective as claimed to be.

The reason given for her non-attendance at the weighing sessions was that she had never been invited to one. She affirmed that she used to

see the CHWs "passing with the scale" in front of her door but, at that time, she did not precisely realise what they were doing The CHW then undertook to do a further visit to the mother to explain the programme to her and to start monitoring the children's growth.

Obviously, this is not an "easy" mother and we may hardly count on her participation in health activities. However, as Ghosh emphasizes " the most need families do not often make use of the health services, and even if the coverage is high, the most needy families may still be outside its reach, and special effort would have to be made to include them"(23).

Indeed, the simple fact of utilizing a house-to-house approach does not necessarily mean that all families will be covered. Even in restricted areas, as an urban slum, the social and psychological limitations of the CHWs in charge of home visits are important factors affecting an expected universal coverage.

When the reasons for non-attendance (table 6) were analysed it was found that there was discrepancy between the reasons given by CHWs and the reasons given by the mothers themselves. One third of the non-participant mothers mentioned that they were never invited to come to weighing sessions. However no CHW cited this as a reason for non-attendance. Maybe they do not actually realize that some mothers in the area are being overlooked. Some mothers mentioned that problems with the children themselves prevented them taking the children to weighing sessions and some other mothers said that for personal reasons they do not feel comfortable attending the weighing sessions. Again these reasons were not mentioned by CHWs. On the other hand, CHWs cited distance as a reason for non-attendance, but this was neither confirmed

by the study (table 7) nor mentioned by the mothers. The great majority (83%) of the CHWs said that non-participant mothers do not see any benefit in the growth monitoring programme and 36% mentioned that such mothers would only participate in programmes providing food supplements or medicines. Some mothers also gave these reasons for not attending the weighing sessions, however, in far smaller numbers: seven (18%) for the former reason and one (26%) for the latter.

When in a particular activity there is a lack of agreement between people who should relate in mutual cooperation it becomes difficult to get any positive results. Community Health Workers and mothers must discuss together about the real causes of their non-participant in order to reach an agreement and overcome the problems.

When compared with other growth monitoring programmes worldwide the mothers' reasons for not participating in the programme studied are to some extent unusual(32). In the UPGK programme in Indonesia distance to the weighing posts and demands on mother's time were the main reasons for the low percentage of children weighed (24). In the ICDS programme in India, health workers reported that children who lived further away from the centre attended irregularly, if at all. The poorest families often did not come to the centres either because of dependence on the mother's wages or because of suspicion or disinterest in the programme(24).

Neither distance nor economic reasons were mentioned by Brazilian mothers, probably because the distance to the weighing places is considerably less and very few (8% of all the interviewed mothers) work outside the home on a regular basis.

For each "at risk neighbourhood" the coverage area of the growth

monitoring programme is not very large. The weighing place is usually a central point within the community with the houses spreading out from this point. Almost 70% of the households lie within 200 meters of the weighing place (Table 7). However it was surprising to verify that more non-participant mothers live close to the weighing places than participant mothers ($P < 0.01$). Therefore it is clear that distance may not be considered a barrier leading to non-participation in that growth monitoring programme. However, this does not seem to be the rule as studies have shown distance to be an important factor influencing attendance at health services. A study on the use of health services carried out in East Africa (25) showed that the level of attendance dropped steadily as distance increased, even when the distance was just a few blocks, as was the case in the present study.

The perception of the significance of the growth monitoring programme by the mothers (table 8) was assessed through the following questions: "Do you think it is useful to weigh your child(ren) monthly? What is it useful for?" The great majority of the mothers (84.2%) answered "yes" to the first question, including 78.0% of the non-participant mothers! Although, many non-participant mothers may have given this answer possibly to please the interviewer, it is equally likely that many other non-participant mothers really think so and even would like to participate in the programme. Interestingly, 15 (10%) of the participant mothers were not able to answer the question, while only 1 non-participant mother was not able to answer. This may indicate that some mothers are not happy with the programme's performance though they continue participating in it.

When asked what it is useful for to weigh children regularly

(table 8), the great majority of the mothers were not able to think of any other benefit than just watching child weight. Twelve percent of the mothers related regular weighing with the child's health status and 7% related it with the child's growth and development. Only 7 (4.5%) of mothers associated regular weighing of the child with the possibility of getting better/appropriate child feeding practices. Moreover, participant and non-participant mothers gave similar answer in very approximate proportion. It is likely, therefore, that participant mothers are not being appropriately aware of the benefits that growth monitoring sufficiently may bring in reducing the effects of infectious diseases and of poor or inappropriate diets on the child's growth.

Nabarro (7) has stressed that mothers are resistant to participating in weighing activities if they cannot see any tangible benefits, and add: "... in our experience there are situations where village-based weighing has actually acted as a deterrent. Mothers who believe that their time is being wasted by the exercise are discouraged from participating in other health care and development initiatives". Mothers in the context studied do not seem to exhibit such behaviour. Despite the fact that no apparent improvement of the nutritional status of their children has been detected, the great majority of them persist in participating in the programme. In addition they do make better use of health resources available than non-participant mothers. Probably mothers participating in this programme have not the false expectation that dramatic change in the nutritional status of their children should occur as a result of attending a monthly weighing session. In fact, as results in tables 8 and 9 show, mothers seem to feel pleased in just knowing the current weight of their children and, at most, comparing this weight with the

previous one.

This, in fact, could be experienced during this study when the anthropometric measures of children were being taken. Invariably participant and non-participant mothers were curious to know the weight of their children even when they had been weighed a couple of days ago. Also mothers who eventually were out of the study asked to have their children weighed. In fact in this study only one mother refused having her child weighed.

The attitude of the mothers (22%) who would prefer to have a well-nourished child weighed rather than the malnourished one (see tables 12, 13 and appendix V), to some extent reflects the gratification aspect that mothers may experience when weighing a well-nourished child.

Conversely, weighing sessions may be seen as a form of public punishment to mothers of malnourished children. Maybe it was due to this feature of weighing sessions that some mothers answered that they would wait for some improvement in the nutritional status of the malnourished child before taking him to be weighed.

When mothers were asked to recall advice received during weighing sessions 47% of them mentioned diarrhoea/ORT messages and 38% mentioned messages on immunization. Nutritional advices on breast-feeding, child feeding and child growth and development were recalled by less than one fourth of the participant mothers (table 10).

Gopalan when discussing the importance of the nutrition component in primary health care says: "... emphasis is placed on 'cure of ailments', immunization, family planning and oral rehydration. Nutrition generally takes a back seat"(24). From the results just presented it seems that

even in the case of health education, nutrition has been left behind, compared to the other components of primary health care.

Recognising this deficiency in nutritional education the VIVA porgramme has tried to elaborate appropriate educative materials for CHWs and mothers. An example of such materials is shown in appendix VII.

The small percentage (10%) of mothers who were able to correctly interpret the child's growth curve in the growth chart test (see table 11 and appendix IV) again reinforces the presumption that not enough emphasis is being given to nutrition matters in the programme.

7.2 CHARACTERISTICS OF GROWTH MONITORING PROGRAMME PARTICIPANT AND NON-PARTICIPANT MOTHERS.

7.2.1 AGE AND EDUCATION OF MOTHERS:

The age of the mother does not seem to be a risk factor influencing her participation in the growth monitoring programme (table 14). Groups of participant and non-participant mothers showed similar age distributions. Although there was 8% more teenage mothers in the group of non-participant than in the participant group, this was not statistically significant when the x^2 test was used.

The mothers educational level (tables 15 and 16) appears to be far more relevant than her age as far as participation in the programme is considered.

Whatever the mother's age, if she is literate (for this study, "literate" means able to read and write at least a simple message) she is more likely to participate in the programme and to be a regular participant of it. These findings support the UNICEF child survival strategy that has female education as one of the 3F's that complement the GOBI interventions (26).

Indeed the perception of benefits of a particular health programme by mothers must increase with their educational level and not necessarily with their age. It is evident that the benefits of child growth monitoring are more difficult for an illiterate mother to understand than for an educated mother (7).

Growth monitoring is essentially an activity in which mothers and health workers correlate child growth with child feeding and health status. This is, therefore, likely to demand a certain capacity of

perception from the people involved in it.

In addition, other particular characteristics of growth monitoring such as understanding growth charts may discourage illiterate mothers from continuing to participate. Nevertheless, being educated is not an exclusive condition for participation in a growth monitoring programme as 36.4% of the participating mothers are illiterate.

7.2.2 PREVIOUS CHILD DEATHS:

There is a theory that when a mother has lost some of her children she becomes more prone to participate in health activities as she is afraid of recurrent child deaths. This theory, however, was not confirmed in the present study. Data analysis showed that the greater the number of child deaths, the lower the mothers' level of attendance at the growth monitoring programme (tables 17 and 18). The ratio of total child deaths to number of mothers calculated for each of the four levels of attendance showed that there is a steady increase in the ratio as the mothers' attendance drops. Hence, for the non-attender group the ratio is more than twice as high than for the regular attender group of mothers.

This result could be expected as one might suppose that if a mother had not been able to seek appropriate curative care for her dying child in the past, it is not likely that, in the present, she is going to look for the preventive care that growth monitoring offers. On the other hand, some mothers may have sought medical care, but been disappointed if it was not capable of saving her child's life. Hence, her former mistrust of health services may negatively affect her present participation in health activities.

Whatever their past experience, this growth monitoring programme does not appear to attract mothers who have lost several children. Therefore, the opportunity of either modifying or improving the child rearing practices of such mothers is being missed.

7.2.3 FAMILY INCOME:

Results of this study have shown that economic status of mothers is not a risk factor for their participation in the programme (table 19). However it should be borne in mind that the study population comprises only mothers with fairly low income, living in very deprived areas and therefore the attitudes of these mothers should not be extended or taken to be the same as those of mothers with a better socio-economic status. According to the results obtained, in the context studied, the mother's poverty does not necessarily signify that she should be excluded from health activities. Better off and worse off mothers have the same probability or possibility of participating in the health activities provided.

These findings confirm those reported by Fajans and Sudinam in Indonesia where no apparent connection between socio-economic status and attendance at the UPGK programme's weighing posts was found (27). Conversely, health workers in the ICDS programme in India, informally reported that the poorest families often did not come to the centres either because of dependence on the mother's wage or because of suspicion or disinterest in the programme (24).

Association between level of income and previous child deaths, infant diarrhoea, hospitalization of children and recent child deaths (Appendix I, tables 1, 2, 3 and 4) was not found within the group of

mothers studied. However, family income is indeed related to the nutritional status of children in the study area as table 38 in appendix I shows. These findings could be expected as health care usualy may be obtained free of charge, to the contrary of food(33).

7.3 *NUTRITIONAL STATUS OF CHILDREN*

No significant difference was detected in relation to the nutritional status of participant and non-participant children. In fact, a quite similarly poor nutritional status was found in both groups of children. Overall, 36.3% of the children were underweight, 58.8% stunted and 9% wasted. Assessing the current nutritional status of children is not the most appropriate way of evaluating growth monitoring, if it is appropriate at all(41). However, some differences between the two groups could be expected.

Indeed, similar growth monitoring programme outcome relating to immunization, ORS usage and nutritional status was observed in Haiti by Rohde. He reports: "... children in participating villages had a higher rate of immunization (15% vs 2%), had almost double the use of ORS (30% vs 17%), and mothers had a far better appreciation of growth and sound feeding practices. Interestingly however, their children were no better nourished than in those from non programme villages"(8, 28).

Nevertheless, for this particular programme it is not difficult to find out the causes of this non-achievement. The infant nutrition skills of CHWs involved in the programme are poor (table 10) and in consequence little appropriate nutritional advice was provided to participant mothers. As these CHWs are also involved in other PHC activities, such as oral rehydration which sometimes give more obvious and immediate results, they end up putting complicated infant nutrition matters aside.

It seems that weighing the child, plotting the weight on the growth chart and informing the mother of the current nutritional status of the child is all a CHW thinks she is supposed to do in a growth monitoring programme. The next and most important step, i.e. assessing the child's growth curve is invariably forgotten. In addition nutritional education is usually replaced by, not less important advice on child immunization and ORT, which are easily and quickly transmitted through straightforward messages.

Hence, growth monitoring cannot offer any nutritional impact when the most vital elements of it are put aside.

In addition, as shown in Appendix I, table 5 (38), in the area studied the nutritional status of children is largely dependent on family income. Hence, shortage of food rather than inadequate feeding practices seems to be the direct cause of malnutrition. In such a situation nutritional advice is of little value for effectively tackling the malnutrition(29).

7.4 UTILIZATION OF CHILD HEALTH RESOURCES AND HEALTH STATUS OF CHILDREN.

7.4.1 FOOD SUPPLEMENTATION PROGRAMMES:

Overall, 23.3% of the mothers interviewed had no eligible children participating in any of the 3 available governmental food supplement programmes (table 26). However, more growth monitoring programme non-participant mothers do not participate in the food supplementation programmes than participant mothers. The difference between these two groups of growth montirong particpant and non-participant mothers in relation to participation in the food supplementation programmes is 22.2%

($p < 0.001$).

Therefore, mothers who do not participate in the growth monitoring programme are also likely to do the same for the food supplementation programmes. This is an important indicator that shows that the non-participant mothers tend not to participate even in attractive programmes that provide immediate benefits for them, such as food supplements. Interestingly when the nutritional status of children participating and not participating in the food supplementation programmes were compared no significant difference between the two groups was found (Appendix I, table 6).

7.4.2 INFANT DIARRHOEA.

Diarrhoea attacks were observed with a similar frequency among children of both participant and non-participant mothers. This finding could be expected as children of both groups live close together sharing the same contaminated environment and in addition they have similar living standards. Effective and feasible measures to prevent infant diarrhoea attacks in a very poor context is still a challenging matter for public health workers. Teaching hygienic principles and breast feeding promotion have proved to be effective educative measures but of difficult applicability in extremely deprived areas, such as urban slums. Difficulties of this kind easily discourage CHWs from persistently transmitting such educative messages to the mothers.

Therefore, it is quite understandable that little effort has been concentrated in this area by Community Health Workers. As a result, no significant impact on the incidence of diarrhoea should be expected among participants in the programme.

7.4.3 USE OF ORAL REHYDRATION SOLUTIONS.

When mothers were asked how often they use ORS during infant diarrhoea episodes, far more participant mothers (56%) answered that they always use it than non-participant mothers (21%). Conversely, rather more non-participant mothers (45.6%) stated they never use ORS than participant mothers did (13.5%).

The doubt might arise that participant mothers have a greater propensity to give favourable answers to please the interviewers than non-participant mothers. However, the fact that this phenomenon may have occurred does not invalidate the question. This possible attitude of participant mothers just shows a certain tendency to be compliant. Indeed, the mothers' behaviour is, to some extent, an important aspect to be considered in the present study.

In short, the growth monitoring programme seems to have a considerable impact on the mothers' awareness of life threatening infant diarrhoea and the consequent need of oral rehydration therapy.

7.4.4 IMMUNIZATION

As with ORS usage, the completeness of basic child immunization again shows a marked difference between the two groups of mothers analysed. Whereas 59.7% of participant mothers had all their children appropriately immunized for their ages, only 24.6% of mothers did in the non-participant group (table 30). When the 4 levels of attendance were separately analysed it was observed that the level of completeness increased with attendance (table 31).

A similar impact was observed in the Tamil Nadu Integrated Nutrition Project (TINP) where coverage data of immunization showed marked

improvement in the project area as compared to the control area(30).

In a region where public health services in general and the provision and delivery of active vaccines in particular are extremely defective, indices of only 50.6% of children appropriately immunized (table 30) are quite to be expected. Unfortunately, however, the figures referring to children of Growth Monitoring programme non-participant mothers are much lower, as only 29.6% of these children were appropriately immunized for their ages at the time of the interview. Indeed, the 30.1% ($p < 0.001$) more appropriately immunized participant children as compared with non-participant children suggests that the Growth Monitoring programme enhances the mothers' awareness on the need of keeping children fully immunized.

7.4.5 CHILD HOSPITALIZATIONS/DEATHS.

In absolute numbers, the hospital admissions of children in the preceding 12 months are similar for both participant and non-participant groups, 12 and 14 hospitalizations respectively (table 32). However, when the numbers of admissions for the total number of mothers, in the two groups are compared, a marked difference appears ($P < 0.01$). High as well as very different rates of hospitalization at 60/1,000 and 155/1,000, for the participant and non-participant group of children respectively, were observed. At this point some questions arise: Why are more children of non-participant mothers hospitalized? Are non-participant mothers more prone to seek hospital care than the participant ones or are children of non-participant mothers more likely to have diseases with a higher degree of severity that demand hospitalization? From the above facts it would seem that the second suggestion is more probable, as if further substantiated when the number of child deaths in

the previous 12 month period in the two groups is analysed. The number of child deaths for the non-participant mothers (7) was three times as high as that for the participants ones(2). This greater number of deaths among the non-participant children suggests that they have diseases with a higher degree of severity or their illnesses are not properly treated. Four out of the 7 children in the non-participant group and one of the 2 children in the participant group who died were not hospitalized during their fatal disease. Therefore non-participant mothers seem more likely to seek help in hospitals than participant mothers.

Considering that there is no significant difference between the two groups regarding family income, nutritional status and diarrhoea incidence, there must be other powerful determinant factors, apart from the well-known economic and biological ones, affecting the child health. In the particular context studied, maternal literacy associated with a greater awareness of the benefits of health activities appear to be some of the most important determinants of child health. Indeed, these factors are likely to lead mothers to actively participate in health activities, such as growth monitoring, and thus to assume positive attitudes and practices towards child care.

The greater number of appropriately immunized children, and the high ORS usage rates - that require a high degree of maternal initiative - verified among Growth Monitoring programme participant mothers appears to justify the above assumptions.

In relation to the impact of growth monitoring programmes on child morbidity and mortality, Herbert (9), in 1987 relates:

> "Since there is no information reported in the medical press, it is impossible to know the effect growth monitoring has, or could have, on morbidity rates or other aspects of development

> anywhere in the world. Because we don't know how growth monitoring 'works' in terms of its use as a screening device for these other processes or conditions, we cannot know to what extent it is influencing, or potentially could influence, mortality rates."

From the present study, it cannot be assumed that the smaller number of deaths and hospitalizations verified among children participating in the growth monitoring programme is a consequence of their participation itself. However, it can be assumed that children who are not participating in the programme are at higher risk of dying or being hospitalized than participant children.

8. CONCLUSION

8.1 PROGRAMME'S OUTCOME

Although there was no evidence of the impact of the programme on the nutritional status of the participant children, the positive results observed regarding immunization coverage, use of ORS, morbidity and mortality, appear to show that the programme has partly achieved its objectives of promoting child health.

Nevertheless, the extent to which these positive results may be accounted for by the programme as opposed tothe mothers themselves, can only be established by further studies. This may be explained by the fact that participant mothers already appreciate of the benefits of participating in health related activities and therefore decided to participate in the growth monitoring programme as well as in other available programmes and activities. Thus, thebetter health status of their children could be due more to their own initiative than the programme's efforts.

On the other hand the participant mothers awareness of child care may have been enhanced by their participation in the growth monitoring programme, and, thus, the merits should go to the programme. This hypothesis seems to be supported by the fact that in this programme the greatest emphasis was placed on the promotion of the benefits of ORT and immunization (table 10), the very activities to which participant mothers showed greatest adhesion.

A prudent assumption, however, is that both hypotheses are true and therefore the combination of the programme's efforts and the mothers' initiatives appears to be responsible for the present outcome.

8.2 PARTICIPATION OF MOTHERS:

Almost one third of mothers living in the deprived areas covered by the growth monitoring programme do not participate in it. In addition, it seems that these mothers tend not to participate in other programmes and activities available in the community either.

The reasons given by mothers for not participating in the growth monitoring programme are social and behavioural grounds, rather than economic geographical or due to barriers within the programme itself. Therefore, non-compliance of these mothers is likely to depend on their lack of perception of the programme's benefits.

8.3 CHILDREN AT RISK:

Although the group of non-participant mothers and children live in similar living conditions to the participant group, they invariably performed worse when certain health indicators were analysed. Higher rates of maternal illiteracy, non-use of health resources and child deaths and hospitalizations was verified among the programmes's non-participant group. Although this group comprises less than 30% of the children living in the area covered by the growth monitoring programme, it appears to contain a core of children highly at risk.

8.4 CONSIDERATIONS AND RECOMMENDATIONS:

The approach utilised by the VIVA programme of concentrating growth monitoring activities in at risk neighbourhoods appears correct. However, using such an approach does not necessarily mean the programme reaches all those most in need of health care. Even in restricted areas such as those chosen for the the growth monitoring programme, many children at great risk may still stand not be reached by the programme.

In the particular context studied those who do not participate in the health activities available in the community seem to form an extremely disadvantaged group that is likely to make a large contribution to the poor health indicators of the area.

This fact is an example of the phenomenon which Tudor Hart (31) called "The Inverse Care Law", According to which the use of health care tends to vary inversely with the need for it in the population served.

Non-participation in community-based growth monitoring programmes may be used as a sensitive indicator for identifying those most in need of assistance from the health services, and community health workers usually know who are the non-participants. However to obtain the cooperation of such groups (mothers especially) appropriate strategies must be devised.

Such strategies must attempt to adapt health activities to the mothers' behaviour rather than change their attitudes as the latter stands little chance of success in the short or medium term.

For the growth monitoring programme especially, the exclusive use of community sessions or house-to-house weighing approaches has not been productive. The combination of both approaches within the same community seems to be more appropriate for the achievement of optimum coverage. Community weighing sessions save the time and efforts of the CHWs and at the same time allow identification of non-participants and possibly those who are most at risk. The use of home visits for those few who are reluctant to participate is an opportunity to identify their problems and to try to overcome them. However, the CHWs must bear in mind that the main aim of home visits is to eventually convince mothers to participate

in the community weighing sessions. Their further regular participation in the sessions would then become an indicator of their growing awareness of child care. Flexibility of the schedule of the weighing sessions also seems to be a useful measure for increasing the participation of mothers. However, the provision of food supplements, medicines and other gratifications should be avoided as this certainly interferes with the educative nature that the weighing sessions should have.

Finally, regardless of the measurable benefits, the potential of growth monitoring to allow mothers to regularly assess the growth or health status of their children should sufficiently justify its promotion. When growth monitoring is carried out on a genuine community basis, the weighing sessions will hardly become a "meaningless ritual", as may happen with clinic based growth monitoring (7). In fact, in poor rural or urban communities the weighing sessions usually become the only regular event in which mothers and health workers who belong to the same social class and share the same culture and environment may meet together and discuss their problems.

A P P E N D I C E S.

APPENDIX I

CONTROL OF SOME STUDY VARIABLES:

In order to control some possible confounders certain relevant variables were analysed separately and compared to variables that either interfere with mother's participation or are affected by her participation in the growth monitoring programme.

Income surely has a strong influence on all aspects of life and easily may be a confounding factor. Hence it will be analysed against some important study variables. For family income per capita a cut off point of 5 U.S. dollars was arbitrarily determined as it divides the study's families into two numerically substantial halves: one very poor with 64 families and the other less poor with 108 families.

TABLE 1

REPORTING OF CHILD DEATHS BY MOTHERS

ACCORDING TO FAMILY INCOME PER CAPITA (US$).

DEATHS / INCOME	NO CHILD DEATH		ONE OR MORE CHILD DEATHS	
	NO.	(%)	NO.	(%)
< US$ 5.00	38	(59.4)	26	(40.6)
> US$ 5.00	65	(61.9)	40	(38.1)
TOTAL:	103	(60.9)	66	(39.1)

(P not significant)

No statistically significant difference was detected between mothers who had up to 5 U.S. dollars of monthly per capita income and those who had more then 5 U.S. dollars, regarding previous child deaths.

TABLE 2

REPORTING OF CHILDREN WITH DIARRHOEA

BY MOTHERS IN THE PRECEDING TWO WEEK PERIOD*

ACCORDING TO FAMILY INCOME PER CAPITA IN US$.

DIARRHOEA INCIDENCE / INCOME	CHILDREN WITH DIARRHOEA		NO CHILDREN WITH DIARRHOEA	
	NO.	(%)	NO.	(%)
< US$ 5.00	39	(60.9)	25	(39.1)
> US$ 5.00	67	(62.0)	41	(38.0)
TOTAL:	106	(61.6)	66	(38.4)

* Previous to interview (P not significant)

Incidence of infant diarrhoea also seems not to be related to family income in the population studied. There was no statistically significant difference in the proportion of mothers who reported diarrhoeal episodes among their children regardless of whether they belonged to one or another income group.

TABLE 3

REPORTING OF HOSPITALIZATION OF CHILDREN UNDER 4

BY MOTHERS DURING THE PRECEDING 12 MONTH

PERIOD* ACCORDING TO FAMILY INCOME PER CAPITA IN US DOLLARS

HOSPITALIZATION / INCOME	CHILD HOSPITALIZED NO.	(%)	NO CHILD HOSPITALIZED NO.	(%)
< US$ 5.00	7	(10.9)	57	(89.1)
> US$ 5.00	13	(12.1)	94	(87.9)
TOTAL:	20	(11.7)	151	(88.3)

* From Aug 87 to Aug 88. (P not significant)

Again no statistically significant difference was detected between the two groups of income in respect of child hospitalization. Both children from families with 5 or less U.S. dollars per capita and with more than 5 dollars appeared to have the same probability of being admitted to hospital with severe illnesses.

TABLE 4

UNDER-4 CHILD DEATHS REPORTED BY MOTHERS DURING THE PRECEDING 12 MONTH PERIOD& ACCORDING TO FAMILY INCOME PER CAPITA IN US DOLLARS

DEATHS / INCOME	CHILD DEATHS NO. (%)	NO CHILD DEATHS NO. (%)
≤ US$ 5.00	1 (1.6)	63 (98.4)
> US$ 5.00	6 (6.7)	83 (93.3)
TOTAL:	7 (4.6)	146 (95.4)

* From Aug 87 to Aug 88. (P not significant)

Similarly, as was observed with hospitalizations, within the population studied variations in family income did not seem to have had considerable influence on the child deaths reported. Indeed, more deaths occurred in the group with higher income than in the group with lower income in which only one child death occurred.

TABLE 5

NUTRITIONAL STATUS OF UNDER 3-TEAR-OLD CHILDREN

ACCORDING TO NCHS WT/AGE STANDARD IN PERCENTILE

BY FAMILY INCOME PER CAPITA IN US DOLLARS

PERCENTILE / INCOME	<10th NO.	<10th (%)	≥10th NO.	≥10th (%)
≤ US$ 5.00	40	(47.6)	44	(52.4)
> US$ 5.00	34	(26.8)	93	(73.2)
TOTAL:	74	(35.1)	137	(64.9)

$x^2=9.649$; DF=1; $p < 0.01$

Interestingly, but not surprisingly, family income was shown to be related to nutritional status of children in the study area. More mildly to severely undernourished children (47.6%) were found in the group with up to 5 U.S. dollars of per capita family income than in the group with over 5 U.S. dollars of income. (26.8%).

TABLE 9

NUTRITIONAL STATUS OF UNDER 3-YEAR-OLD CHILDREN ACCORDING TO NCHS WEIGHT FOR AGE STANDARD IN PERCENTILES BY PARTICIPATION IN FOOD SUPPLEMENTATION PROGRAMMES

PERCENTILE	<10th		≥10th	
PARTICIPATION	NO.	(%)	NO.	(%)
PARTICIPANTS	70	(36.8)	120	(63.2)
NON-PARTICIPANTS	19	(34.5)	36	(65.5)
TOTAL:	89	(36.3)	156	(63.7)

(P not significant)

No statistically significant difference in the nutritional status of children was detected between those who participated in food supplementation programmes and those who did not. In both participant and non-participant groups a high percentage of underweight children, 36.8% and 34.5% respectively, was observed. These numbers match with those observed by the growth monitoring programme. This could be expected as children participating in one programme are largely the same ones who participate in the other and vice versa for the non-participants.

APPENDIX - II

MAPS OF SOUTH AMERICA , BRAZIL AND STATE OF CEARA.

PROAIS / VIVA PROGRAMME COVERAGE AREA.

APPENDIX - III

SOME PICTTURES OF THE REGION WHERE THE GROWTH MONITORING PROGRAMME OPERATES AND ITS PEOPLE.

DEPRIVED LIVING CONDITIONS OF AN URBAN SLUM OF FORTALEZA, BRAZIL.

RURAL VILLAGE WHERE THE GROWTH MONITORING PROGRMME OPERATES.

COMMUNITY HEALTH WORKER WEIGHING CHILDREN AT HOME - OPPORTUNITY FOR FAMILY PARTICIPATION.

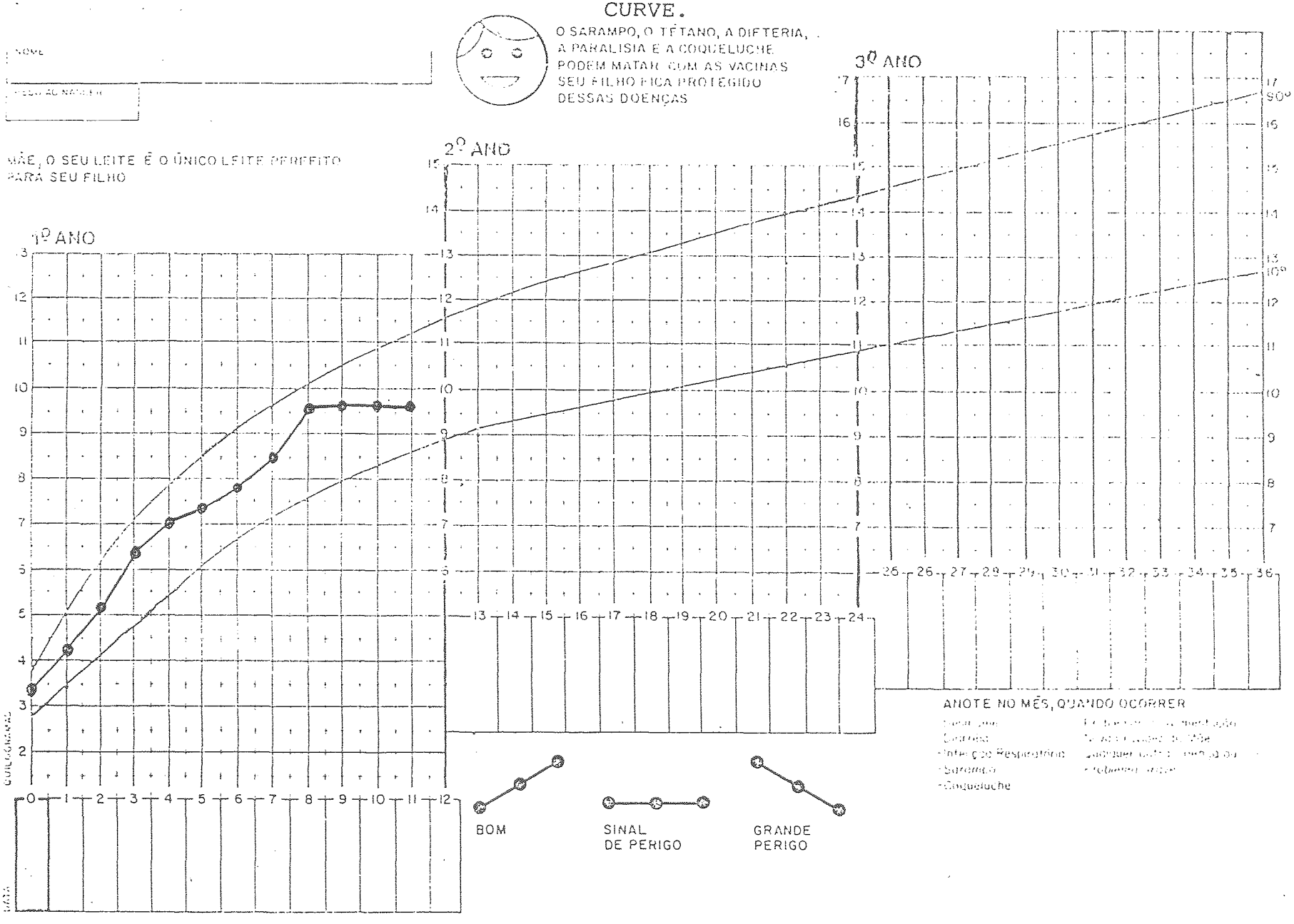
POSITIVE DEVIATION - WELL NOURISHED 2 YEAR OLD BOY AND HIS PROUD MOTHER.

MARASMIC CHILD AND HER NON-PARTICIPANT MOTHER.

NEW TALC SCALE IN ACTION.

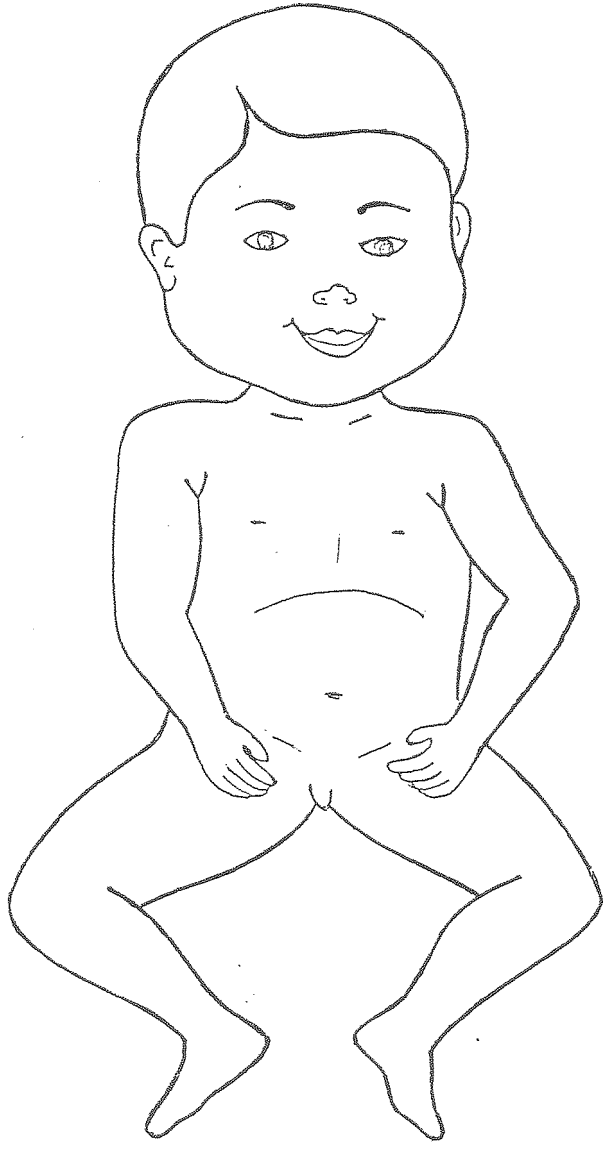
APPENDIX - IV

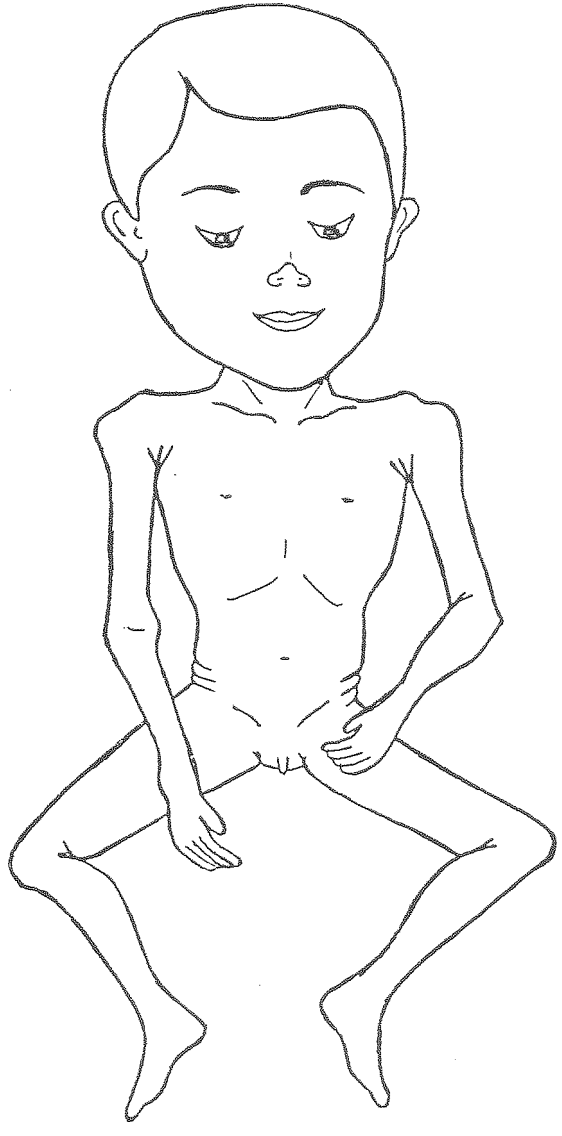
GROWTH CHART TEST - INTERPRETATION OF A CHILD'S GROWTH CURVE.



APPENDIX - V

ASSESSMENT OF MOTHER'S ATTITUDE TOWARDS WEIGHING WELL NOURISHED OR MALNOURISHED CHILD.





APPENDIX - VI : Questionnaires.

- Questionnaire for mothers - in Portuguese.

PROAIS/VIVA – U F C
Avaliação de Prog. de Monitorização do Crescimento
QUESTIONÁRIO PARA FAMÍLIAS COM CRIANÇAS COM MENOS DE 3 ANOS

IDENTIFICAÇÃO

Questionário No. _____

1 – Unidade _____ Data _____ 1 ___ ___

Cluster: _____ 2 – No. da mãe: _____ 2 ___ ___ ___ ___ ___

DADOS DA FAMÍLIA

Parentesco do entrevistado em relação às crianças da casa:
Mãe Avó Irmã Tia Outro. Especificar: _____

Essa pessoa cuida das crianças menores de 3 anos?
Sim, regularmente Sim, irregularmente Não

Nome da mãe: _____ 3 – Idade: _____ 3. ___ ___

4 – Condição marital: 1 – Sem companheiro
2 – Com companheiro 4 ___

5 – Educação da mãe: 1 – Nenhuma 2 – Lê/escreve simples mensagens
Educação formal. Especificar: _____ 5 ___

Ocupação da mãe:
6 – Você trabalha fora de casa? 1 – Não
2 – Sim. Especificar:
3 – Desempregada. 6 ___

7 – Há quanto tempo? _____ 7 ___ ___

Se está desempregada:
8 – Quanto saiu do emprego? _____ 8 ___ ___

9 – Quanto tempo trabalhou nesse emprego? _____ 9 ___ ___

10 – Quantos filhos vivos você teve? _____ 10 ___ ___

11 – Destes quantos estão vivos agora? _____ 11 ___ ___

12 – Quantas pessoas vivem nesta casa com você agora? _____ 12 ___ ___

13 – Quantos compartimentos tem sua casa? _____ 13 ___

14 – Em quantos compartimentos dormem as pessoas da casa? _____ 14 ___ ___

– Qual foi a renda total de sua família no mês passado?
Cz$ _____
(soma de todos rendimentos)
câmbio atual do Dollar: US$ 1,00 = Cz$ _____

15 – Renda familiar per capita: US$ _____ 15 ___ ___

16 – Quanto dinheiro disponível você teve em mãos a semana passada?
Cz$ _____ 16 ___ ___

CONDIÇÕES SANITÁRIAS:
água
17 – De onde vem a água que sua família usa para beber? 17 ___
1 – Encanada dentro de casa
2 – Encanada fora de casa
3 – Fonte pública (chafariz, torneira pública etc)
4 – Fonte natural (rio, lagoa, etc)
5 – Poço artezanal (cacimba, poço profundo, etc)
6 – Comprada (carroças, tanques, etc)
7 – Outro. Especificar _____

18 – Você tem filtro em casa? 1 – Não 2 – Sim 18 ___

Sanitário:

19 — Onde são postas as fezes das pessoas? 19 ___

1 — Céu aberto
2 — Fossa negra
3 — Fossa séptica
4 — Rede de esgotos
5 — Outro. Especificar: _____

MIGRAÇÃO:

20 — Há quanto tempo sua família mora nesta casa _____ 20 ___

Se mora há menos de um ano, perguntar:

21 — Onde morava antes? 21 ___

1 — Mesma cidade mas noutro bairro
2 — Mesma cidade e mesmo bairro
3 — Outra cidade, zona Rural
4 — Outra cidade, zona Urbana
5 — Outro. Especificar _____

— Qual a idade dos seus filhos menores de 4 anos?
(Começar com o maior dos filhos)

	Na. da Criança	Nome da Criança	Idade anos	Idade meses	Sexo M	Sexo F	
22							22 ___ ___ ___ ___
23							23 ___ ___ ___ ___
24							24 ___ ___ ___ ___
25							25 ___ ___ ___ ___
26							26 ___ ___ ___ ___

PARTICIPAÇÃO DA MÃE EM PROGRAMAS DE NUTRIÇÃO

Mães neste bairro receberam cartões de peso como este (mostra cartão). Quais de suas crianças menores de 4 anos tem desses cartões? Receberam de onde?

	No. da Criança	Programa que forneceu: PROAIS/ VIVA	LBA	Posto	SSE Campanha	Outros Especificar	
27							27 ___ ___
28							28 ___ ___
29							29 ___ ___
30							30 ___ ___
31							31 ___ ___

Se a mãe recebeu o cartão mas não mostrou, colocar a causa no espaço correspondente

32 — P — cartão foi perdido 32 ___
33 — C — cartão não esta em casa 33 ___
34 — N — não quiz ou não pode mostrar 34 ___

35 — Você esta participando de algum programa de pesagem das crianças? 35 ___
1 — Não— 2 — Sim

36 — Qual? 36 ___
1 — VIVA 2 — LBA 3 — Posto
4 — Revisão de Parto (PROAIS) 5 — Outro: _____

37 — Além de você, alguém mais leva as crianças para pesar? 37 ___
1 — Não 2 — Sim

38 — Quem leva? _____ 38 ___

39 — Qual a idade dessa pessoa? _____ 39 ___ ___

40 — Com que frequência ela leva? 40 ___
1 — Sempre 2 — Frequentemente 3 — Esporadicamente

41 — *Distância aproximada em metros da casa para o local onde são feitas as sessões de peso?* 41 ___ ___ ___

Pesagem de cada crianças durante este ano:

	No. da criança	meses Jan	fev	mar	abr	mai	jun	jul	ago	set	Programa que pesou	
42												42 ___ ___ ___
43												43 ___ ___ ___
44												44 ___ ___ ___
45												45 ___ ___ ___
46												46 ___ ___ ___
47												47 ___ ___ ___
48												48 ___ ___ ___

Comparecimento da mãe às sessões de peso:

49 | | | | | | | | | | 49 ___

Obs: Checar com a *agente de saúde local, meses, em que não houve sessão de peso naquela comunidade.*

50 | | | | | | | | | | 50 ___

51 — Pelos cartões de suas crianças (ou ausência deles) vemos que você durante este ano: 51 ___

1 — Veio regularmente as sessões de peso. (Não faltou a 2 ou mais sessões seguidas)
2 — Deixou de vir a 2 ou mais sessões de peso seguidos.
3 — Não veio as 3 últimas ou mais sessões de peso.
4 — Nunca veio a nenhuma sessão de peso

52 — Qual foi o principal motivo que fez você vir a (quase) todas sessões de peso este ano? _____ 52 ___ ___
Outros motivos? _____

53 — Qual foi o principal motivo que fez você faltar a várias *sessões de peso seguidas?* _____ 53 ___ ___

Outros motivos: _____

54 — Qual foi o principal motivo que fez você desistir de vir *as sessões de peso?* _____ 54 ___ ___

Outros motivos: _____

55 — Qual o principal motivo *que fez você nunca vir para as sessões de peso?* _____ 55 ___ ___

☐ *Nunca foi convidada.*
Outros motivos: _____

CONHECIMENTO DA MÃE SOBRE O CARTÃO DE CRESCIMENTO/NUTRIÇÃO DA CRIANÇA

Mostrando à mãe um cartão de crescimento padrão com uma curva de peso de uma criança, perguntar:

56 — Da última vez que esta criança foi pesada ela: 56 ___ ___
1 — Ganhou peso
2 — Perdeu peso
3 — Continuou com o mesmo peso em relação ao mês anterior

1 — Certo
2 — Errado
3 — Não soube responder

Então pedir a mãe para explicar sua resposta:

57 — Examinando o cartão da criança, como você *sabe que ela ganhou/perdeu/continuou com o mesmo peso?* 57 ___

1 — *Explicação correta*
2 — *Explicação incorreta*
3 — *Não explicou*

Qualquer que seja a resposta (correta ou incorreta) elogiar a mãe e perguntar:

58 — Quem lhe ensinou a usar o cartão de peso? 58 ___
1 — Agente de saúde
2 — Médico
3 — Enfermeira
4 — Auxiliar de saúde
5 — Outro. Especificar _____
6 — Não foi ensinada

Usando o cartão de qualquer de suas crianças identificar qual delas perdeu ou não ganhou peso mais recentemente e perguntar

59 — O(A) _____ *não ganhou/perdeu o pese nestes meses* de _____ a _____ de 19____. (mostrar no cartão) 59 ___ ___

60 — *Qual você acha foi a causa?* _____ 60 ___

61 — 1 — causa anotada no cartão e resposta da mãe confere 61 ___ ___
2 — cuasa anotada no cartão e resposta não confere.
Especificar: _____
3 — causa não anotada

62 — Você recebeu alguma orientação nesta ocasião quando sua criança foi pesada? 62 ___
1 — Não
2 — Sim
3 — Não lembra

63 — Qual? _____ 63 ___ ___

64 — Você seguiu esta orientação? 64 ___
1 — Não
2 — Sim

65 — *Porque não?* _____ 65 ___ ___

66 — Quem lhe deu esta orientação? 66 ___
1 — Agente de saúde
2 — Médico
3 — Enfermeira
4 — Auxiliar de saúde
5 — Outro. Especificar: _____

— Qual outras orientações sobre a saúde de suas crianças você já recebeu nestas sessões de peso?
(colocar (M) nas lembradas pela mãe e (E) nas lembradas pelo entrevistador):

67 — Amamentação _____ 67 ___
68 — Alimentação da criança: _____ 68 ___
69 — Diarréia/TRO _____ 69 ___
70 — Crescimento/desenvolvimento _____ 70 ___
71 — Imunização _____ 71 ___
72 — Outros _____ 72 ___

73 — Você acha que adianta saber o peso de suas crianças a cada mês? 73 ___
1 — Sim
2 — Não
3 — Não sabe

74 — Porque adianta? _____ 74 ___
75 — Porque não adianta? _____ 75 ___

Mostrando a mãe figuras de uma criança bem nutrida e de outra mal nutrida, perguntar a mãe:

76 — Se você tivesse 2 crianças como estas (mostrar figuras) e só pudesse levar uma delas para a sessão de pêso. Qual das duas você levaria? 76 ___
1 — A que está gordinha/com saúde
2 — A que está magrinha/doente
3 — *Não levaria nenhuma*
4 — Não sabe

77 — Porquê? ___ 77 ___ ___

DADOS DE MORBIDADE

78 — Alguma de suas crianças com menos de 4 anos de idade foram internadas nos últimos 12 meses? 78 ___
1 — Não
2 — Sim

Internamentos:

No. da *criança*	*Quando*	*Causa*

79 — Número de internamentos: ___ 79 ___

DADOS DE MORTALIDADE

80 — Alguma de suas crianças com menos de 4 anos morreu nos últimos 12 meses? 80 ___
1 — Não
2 — Sim

81 — Qual a idade? ___ 81 ___ ___

82 — Qual a causa? ___ 82 ___

PARTICIPAÇÃO EM PROGRAMAS DE SUPLEMENTAÇÃO ALIMENTAR

83 — Você recebe alimentos de algum programa do governo? 83 ___
1 — Não
2 — Sim

84 — Se não participa, porque não? ___ 84 ___ ___

85 — Se participa, quem lhe indicou este(s) programas? ___ 85 ___ ___

— Em que programas suas crianças com menos de 4 anos estão inscritas? (recebendo alimentos regularmente)

	No. da criança	Programa de suplementação alimentar LBA	INAN	Leite	Outro. Especificar.	
86						86 ___ ___
87						87 ___ ___
88						88 ___ ___
89						89 ___ ___

90 — Você mesma esta inscrita em algum destes programas? 90 ___
1 — Não
2 — Sim

91 — Qual? 1 — LBA 2 — INAN 91 ___
3 — Outro. Especificar ___

DIARRÉIA/TRO:

92 — Nas 2 últimas semanas algum de seus filhos teve diarréia? 92 ___
1 — Não
2 — Sim

93 — Você usou o soro? 93 ___
1 — Não
2 — Sim

94 — Que tipo? 94 ___
1 — Soro caseiro
2 — Soro de pacote comprado
3 — Soro da CEME
4 — Soro de garrafa (Pedialyte, Hidrax, etc

95 — Quando suas crianças têm diarréia, você usa soro: 95 ___
1 — Sempre?
2 — As vezes?
3 — Nunca

IMUNIZAÇÃO:

Checar o cartão de vacinas das crianças menores de 3 anos. (colocar um (X) nos espaços correspondentes a cada dose tomada).

	No. da criança	BCG 1 dose	SABIN 1a.	SABIN 2a.	SABIN 3a.	DPT 1a.	DPT 2a.	DPT 3a.	Sarampo 1 dose	Vacinas em dia? S	Vacinas em dia? N	
96												96 ___
97												97 ___
98												98 ___
99												99 ___

ESTADO NUJTRICIONAL DAS CRIANÇAS

Peso e altura das crianças com menos de 3 anos

	No. da criança	Idade	Sexo	Peso	Altura
100					
101					
102					
103					

Entrevistador: _____

PROAIS/VIVA - U.F.C.

EVALUATION OF GROWTH MONITORING PROGRAMME

QUESTIONNAIRE FOR FAMILIES WITH CHILDREN UNDER THREE YEARS OF AGE

IDENTIFICATION: _____

QUESTIONNAIRE No: _____ Date: _____ 1. ___ ___

Community: _____ 2. Mother's No:___ 2. ___ ___ ___ ___ ___

FAMILY DATA.

Mother's Name: _____ 3. Mother's Age:____ 3. ___ ___

4. Marital Status: _____ 1. With Partner
2. Without Partner
4. ___

5. Mother's Education
1. None
2. Read/write simple Messages
5. ___

Formal Education (Specify): _____

_____

MOTHER'S OCCUPATION:

6. Do you work outside of home
1. No
2. Yes
3. Unemployed
6. ___

7. How long do you work? _____ 7. ___ ___

If she is unemployed:

8. When did you leave your job? _____ 8. ___ ___

9. How long did you work in this job? _____ 9. ___ ___

10. How many live births did you have? _____ 10. ___ ___

11. Of these live births, how many are alive now? _____ 11. ___ ___

12. How many people live with you in your house? _____ 12. ___ ___

13. How many rooms does your house have? _____ 13. ___

14. In how many rooms do the people sleep? _____ 14. ___ ___

What was the total income of your family in the last month?

Cz$: _____ _____

(Dollar exch rate: Cz$____ = US$1.00)

15. Family income per capita: 15. ___ ___

16. How much available money have had in hand last week? 16. ___ ___

SANITARY CONDITIONS
WATER

17. Where does the drinking water come from? 17. ___
    1. Tap water inside home
    2. Tap water outside home
    3. Public tap
    4. Natural source (river, lake, etc)
    5. Well
    6. Purchase water
    7. Other (specify) _____

18. Do you have a filter? 1. No. 2. Yes. 18. ___

TOILETS

19. Where are faeces disposed of? 19. ___ ___
    1. Open air
    2. VIP latrine
    3. Flush toilet
    4. Sewage system
    5. Other (specify) _____

MIGRATION

20. How long has your family lived in this house? _____ 20. ___ ___

21. If less than one year, where did you live before? 21. ___
    1. Same city, another neighbourhood
    2. Same city and neighbourhood
    3. Other city, rural zone
    4. Other city, urban zone
    5. Other (specify) _____

WHAT IS THE AGE OF YOUR OTHER CHILDREN UNDER 4?
(Commence with the oldest child)

	Child No.	Child's name	Age Years	Age Months	Sex M	Sex F	
22							22. ___ ___ ___ ___
23							23. ___ ___ ___ ___
24							24. ___ ___ ___ ___
25							25. ___ ___ ___ ___
26							26. ___ ___ ___ ___

MOTHER PARTICIPATION IN NUTRITION PROGRAMMES

Which of you under-4 children have this growth chart?
(Show a growth chart).
Where do they come from?

	Child No.	NUTRITION PROGRAMS				
		PROAIS/ VIVA	LBA	Posto	Campanha	Other
27						
28						
29						
30						
31						

27. ___ ___
28. ___ ___
29. ___ ___
30. ___ ___
31. ___ ___

If a mother received a chart but she didn't show it, put the cause in the proper place in the table.

32. P: Lost chart 32. ___

33. C: Chart not at home 33. ___

34. N: For mother either refused to or couldn't show it 34. ___

35. Are you participating in any child weighing programme? 35. ___

36. Which one? 36. ___
    1. VIVA
    2. LBA
    3. Posto
    4. PROAIS
    5. Other (specify) _____

37. Apart from you, does someone else take the children to the weighing sessions? 37. ___

    1. No. 2. Yes.

38. Who? _____ 38. ___

39. How old is he/she? _____ 39. ___ ___

40. How often does he or she do it? _____ 40. ___

    1. Always 2. Often 3. Sporadically

41. How far (in metres) is the house from the place where the weighing sessions are carried out? 41. ___ ___ ___

WEIGHING OF EACH CHILD DURING THIS YEAR.

	CHILD No.	MONTHS									WEIGHING PROGRAM	
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
42												42. ___ ___ ___
43												43. ___ ___ ___
44												44. ___ ___ ___
45												45. ___ ___ ___
46												46. ___ ___ ___
47												47. ___ ___ ___
48												48. ___ ___ ___

MOTHER'S ATTENDANCE AT THE WEIGHING SESSIONS:

49 | | | | | | | | | | 49. ___

OBS: Check local CHW on months that there was a weighing session in that particular community.

50 | | | | | | | | | | 50. ___

51. By the growth charts of your children we can see that: 51. ___

1. You came regularly to the weighing sessions
2. You didn't come to 2 or more consecutive weighing sessions
3. You didn't come to the last 3 weighing sessions
4. You never came to any weighing sessions

52. What was the main reason which encouraged you to come to (almost) all the weighing sessions? 52. ___ ___

_____

53. What was the main reason for you not coming to several consecutive weighing sessions? 53. ___ ___

_____

54. What was the main reason for you dropping out of attending the weighing sessions? 54. ___ ___

_____

55. What was the main reason for you never coming to a weighing session? 55. ___ ___

_____

☐ Never invited.

MOTHER'S KNOWLEDGE OF GROWTH CHART AND CHILD NUTRITION.

Showing the mother a standard growth chart with a growth curve for a child, ask her:

56. The last time this child was weighed, he/she: 56. ___ ___

1. Gained weight
2. Lost weight
3. Remained at the same weight in relation to the previous month

1. Right
2. Wrong
3. Did not answer

Then ask the mother for an explanation of her answer.

57. Explaining the child's growth chart, how do you know she/he gained/lost/kept the same weight? 57. ___

1. Correct explanation
2. Incorrect explanation
3. Did not explain

Whatever the answer, congratulate the mother and ask her:

58. Who taught you to understand the growth chart? 58. ___

1. CHW
2. Doctor
3. Nurse
4. Health Auxiliary
5. Other (specify) _____
6. She was not taught

Using the growth chart of any of her children, identify which one lost or did not gain weight more recently and ask her:

59. (Child's name) _____ didn't gain/lost weight in the months from _____ to _____ 19__ (show on the chart. 59. ___ ___

60. What do you think was the cause? _____ 60. ___

_____ ___ ___

61. 1. Cause noted in the growth chart and mother's answer agreed
2. Cause noted in the growth chart but mother's answer did not agree
3. Cause not noted

61. ___ ___

62. Did you receive any advice on this occasion? 62. ___

1. No
2. Yes
3. Don't remember

63. Which one? _____ 63. ___ ___

_____

64. Did you follow this advice? 64. ___

1. No
2. Yes

65. Why not? _____ 65. ___ ___

66. Who gave you this advice? 66. ___

1. CHW
2. Doctor
3. Nurse
4. Health Auxiliary
5. Other (specify)

Which other advices on child care have you received in the weighing sessions?
(Put [M] in those recalled by mother herself and [E] in those listed by the interviewer).

67. Breast-feeding _____ 67. ___

68. Child feeding _____ 68. ___

69. Diarrhoea/ORT _____ 69. ___

70. Child growth and development _____ 70. ___

71. Immunization _____ 71. ___

72. Others _____ 72. ___

73. Do you think it is useful to know the weight of your child every month? 73. ___

1. Yes
2. No
3. Don't know

74. Why it is? _____ 74. ___

75. Why it isn't? _____ 75. ___

Showing to the mother the picture of both a well nourished and a malnourished child, ask her:

76. If you had 2 children like that and you could take only one of them to the weighing session which one would you take? 76. ___

1. The fat one
2. The thin one
3. Neither
4. Don't know

77. Why? _____ 77. ___ ___

MORBIDITY DATA:

78. Have any of your under-4 children been hospitalized in the last 12 month period? 78. ___

1. No
2. yes

Admissions:

CHILD No	WHEN (DATE)	CAUSE

79. Number of admissions: _____ 79. ___

80. Have any of your under-4 children died in the last 2 months? 80. ___

1. No
2. Yes

81. How old was he/she? _____ 81. ___ ___

82. What was the cause? _____ 82. ___

MOTHER'S PARTICIPATION IN FOOD SUPPLEMENTATION PROGRAMMES

83. Do you receive food from any government programmes? 83. ___

1. No
2. Yes

84. If not, why? _____ 84. ___ ___

85. In which programme are your children registered? 85. ___ ___

	CHILD No	FOOD SUPPLEMENTATION PROGRAMME				
		LBA	INAN	LEITE	Other (specify)	
86						86. ___ ___
87						87. ___ ___
88						88. ___ ___
89						89. ___ ___

90. Are you registered in any of these programmes? 90. ___

1. No
2. Yes

91. Which one? 91. ___

1. LBA
2. INAN
3. Other (specify) _____

DIARRHOEA/ORT

92. In the last 2 weeks have any of your children had diarrhoea? 92. ___

1. No
2. Yes

93. Did you use any ORS? 93. ___

1. No
2. Yes

94. Which type? 94. ___

1. Homemade ORS
2. Commercially sold packets
3. Free government packets
4. Pre-bottled ORS

95. When your children have diarrhoea you use ORS 95. ___

1. Always
2. Sometimes
3. Never

IMMUNIZATION

Check the vaccination chart of the under-3 children.

	CHILD No.	BCG		SABIN			DPT			MEASLES	CHILDREN PROPERLY IMMUNIZED		
		1 dose		1a	2a	3a	1a	2a	3a		Y	N	
96													96. ___ ___
97													97. ___ ___
98													98. ___ ___
99													99. ___ ___

CHILDRENS' NUTRITIONAL STATUS.

Weight and height of under-3 children.

	Child No.	Age	Sex	Weight	Height
100					
101					
102					
103					

Interviewer: _____

ASSESSMENT OF GROWTH MONITORING BY COMMUNITY HEALTH WORKERS

REVISAO DE MONITORIZACAO DE CRESCIMENTO PELOS AGENTES DE SAUDE
PROAIS/VIVA - Julho, 1988

Estamos fazendo uma avaliaçao do programa de monitorizaçao do crescimento. Responda as perguntas abaixo, depois devolva este questionário para o supervisor.

Nome da agente: NAME OF CHW:

Unidade: HEALTH UNIT

Colocar um X na resposta apropriada.

1. Como é que você faz as pesagens?
HOW DO YOU WEIGH THE CHILDREN?

_____ Juntando um grupo, em um local para pesar todos - WEIGHING SESSION.
_____ Pesando nas casas de cada criança individualmente ?-AT HOME.
_____ Outro:(Descrever) - OTHER APPROACH:

2. Durante as sessoes de peso, com que frequência você faz o seguinte: HOW OFTEN DO YOU GIVE ADIVISE TO MOTHERS ON:

	ALWAYS Sempre	FREQUENTLY Frequentemente	ESPORADICALY Raramente	NEVER Nunca
CHILD'S GROWTH a.Diz à mae o peso da criança e explica se ela está crescendo bem ou nao.				
CHILD'S FEEDING b.Orienta a mae sobre a melhor dieta para a crianca				
INFANT DIARRHOEA/ORT. c.Orienta a mae de uma criança com diarreia para dar o soro oral				
FEEDING DURING DIARRHOEA d.Orienta a mae de uma criança com diarreia para nao parar de dar comida a ela				
CATH UP GROWTH e.Orienta a mae de uma criança que perdeu peso sobre como recuperar este peso				
CHECK IMMUNIZATION f.Examina o cartao para verificar se as vacinas estao em dia?				

3. No caso de encontrar uma criança com desnutriçao grave, o que é que você faz com ela? (Explicar bem a sua orientaçao sobre a dieta.)

WHAT KIND OF DIET WOULD YOU RECOMMEND FOR A SEVERELY MALNOURISHED CHILD?

4. Até agora qual tem sido o resultado com os desnutridos que você tem acompanhado? WHAT HAS BEEN THE RESULT OF FOLLOWING UP THE MALNOURISHED CHILDREN?

_____ Quase todos melhoraram -ALL HAS GONE BETTER.
_____ Só a metade melhorou - ONLY HALF HAS GONE BETTER.
_____ Poucos melhoraram - FEW HAS GONE BETTER.

5a. Você já ouviu falar do uso de óleo de cozinha misturado na mamadeira para fazer um leite mais forte?

_____ Nao HAVE YOU EVER HEARD ABOUT ENERGY DENSITY?
_____ Sim

b. Se já ouviu falar, já usou com alguma criança que acompanhou no seu trabalho?

_____ Nao
_____ Sim IF YES, HAVE YOU ALREADY ADIVISED MOTHERS ABOUT IT?

6. Para uma criança que está só mamando, em que idade a mae deve começar a dar outros alimentos que nao seja leite?

_____ FOR A CHILD EXCLUSIVELY BREASTFED, WHEN SHOULD OTHER FOODS BE INTRODUCED IN HIS DIET?

7. Para uma criança de 2 meses que já está tomando a mamadeira, deve se dar só o leite, ou leite com massa?

_____ Só leite FOR A CHILD 2 MONTHS OLD WHO IS BOTTLE FED, SHOULD
_____ Leite com massa SOME STARCH BE ADDED TO THE MILK?

8. Conheçe alguns alimentos locais que você acha que sao nutricionalmente ricos (fortes) mas pouco comidos pelo povo? Quais?

WHICH NUTRITIVE LOCALLY AVAILABLE FOOD YOU KNOW IS NOT EATEN BY THE PEOPLE?

9. Quais sao os assuntos que você gostaria de receber mais informaçoes? ON WHICH OF THESE SUBJECTS WOULD YOU LIKE TO RECEIVE AN ADDITIONAL TRAINNING?

_____ Como fazer com que a mae entenda o cartao da criança?-GROWTH CHART
_____ Como tratar os problemas que a mae tem quando está dando de mamar. -PROBLEMS DURING BREASTFEEDING?
_____ O preparo correto da mamadeira. TO PREPARE PROPERLY A BOTTLE.
_____ O que a criança com menos de 1 ano pode comer, além do leite. -DIET FOR CHILD OVER ONE YEAR OF AGE.
_____ Como se pode alimentar uma criança desnutrida, para se recuperar. DIET FOR A MALNOURISHED CHILD.
_____ Outros (Descrever)

10. Nós queríamos saber mais sobre as maes que nao participaram regularmente nas pesagens. Para cada grupo abaixo anotar:
A. Os motivos que elas dao para nao participar regularmente, e
B. Sua opiniao porque elas nao participam

a. As maes que nunca participaram
Os motivos dela:

IN YOUR OPINION WHY SOME MOTHERS NEVER PARTICIPATED IN THE PROGRAMME?

Sua opiniao:

b. As maes que participaram, mas depois deixaram de participar.
Os motivos delas:

IN YOUR OPINION WHY SOME MOTHERS GAVE UP PARTICIPATING IN THE PROGRAMME?

Sua opiniao:

11. Três crianças podem ter a mesma idade mas crescer (ganhar peso) de modo diferen

Alguns modos de ganhar peso não são saudáveis para uma criança.

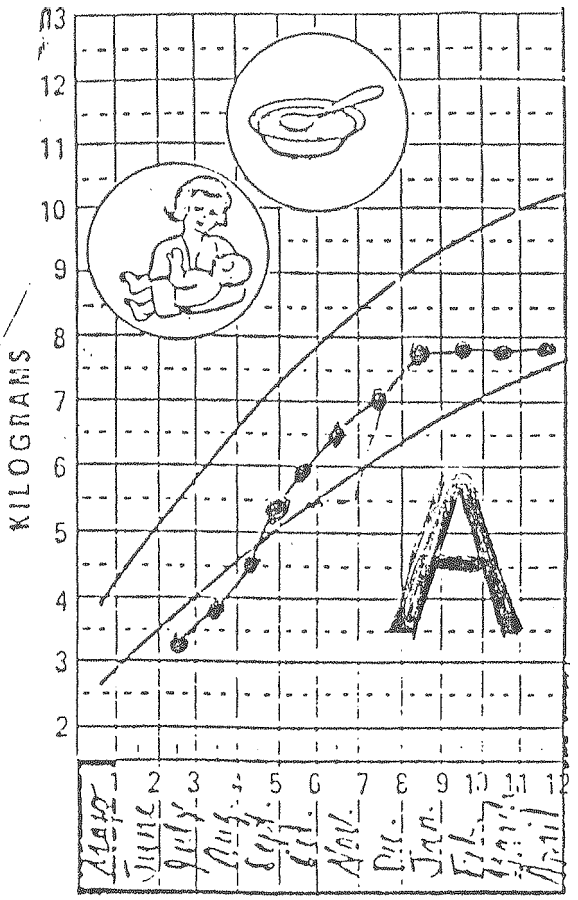
Examine os 3 cartoẽs abaixo e responda:

WHICH ONE OF THE THREE FOLLOWING GROWTH CURVES SHOWS THAT THE CHILD IS GROWING PROPERLY?

A) Qual das 3 crianças esta crescendo melhor?

☐ A ☐ B ☐ C

B) Justifique sua resposta? JUSTIFY YOUR ANSWER:


KILOGRAMS
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12
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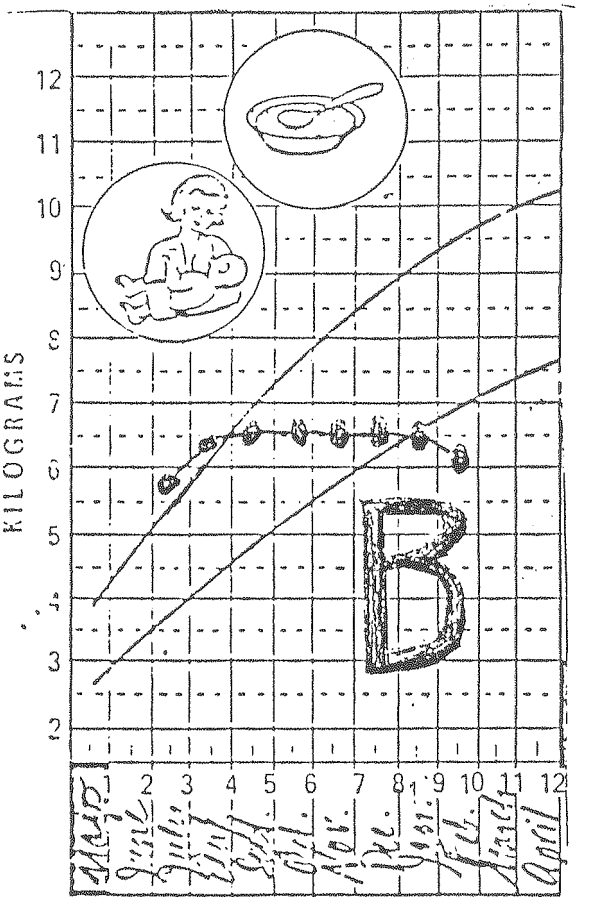
KILOGRAMS
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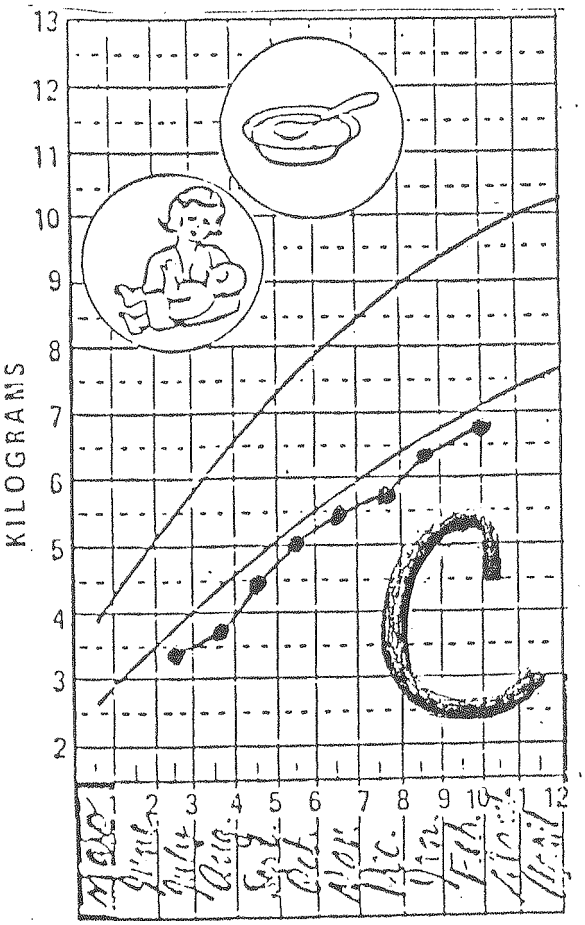
KILOGRAMS
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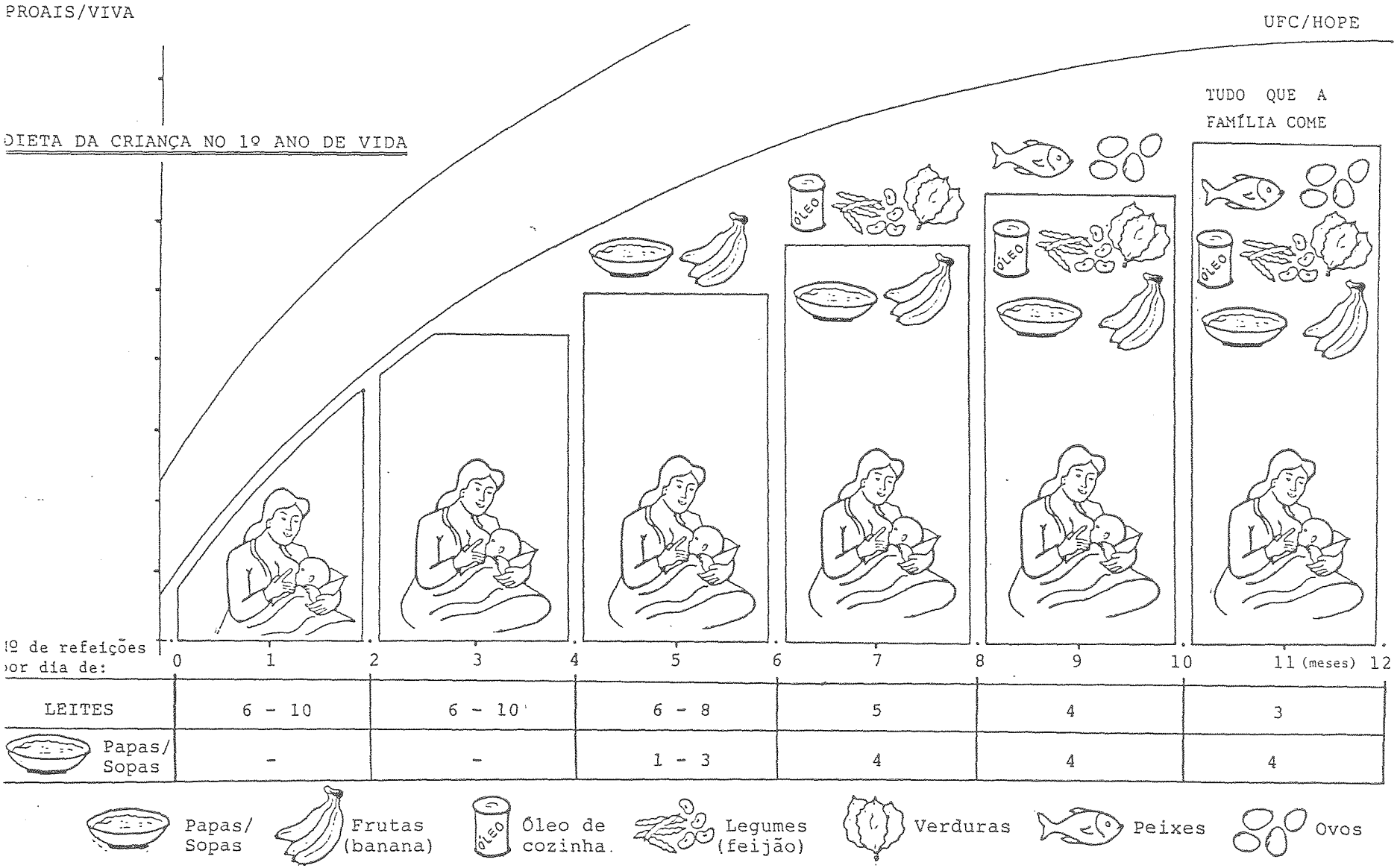
C

APPENDIX - VII

NUTRITION EDUCATION MATERIAL : APPROPRIATE INFANT DIET.



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