

**“Alfred Rusescu”
Institute for Mother and Child Care**

***NUTRITIONAL STATUS OF PREGNANT WOMEN,
CHILDREN UNDER 5 YEARS OLD AND
SCHOOLCHILDREN AGED 6-7 YEARS***

***ROMANIA
2005***

**A study conducted in cooperation and with the support of the
UNICEF Representative Office in Romania**

FOREWORD

The present study is part of an extensive project started in April 2004, engulfing 3 studies concerning nutritional status of children and pregnant women: "*Nutritional Status of Pregnant Woman*", "*Nutritional Status of Children Under 5*" and "*Nutritional Status and Iodine Nutrition in Schoolchildren Aged 6-7 Years*".

In the last years, besides glucidic, lipidic and protidic macronutrients, a special attention is paid to micronutrients, especially to microminerals. These are considered essential nutritional factors, with stimulating and balancing roles in metabolism, and thus in the normal body development and functioning. It is widely recognized that nutritional deficiencies in intrauterine life and in early childhood affects growth and development, health status, and last but not least, life expectancy and the quality of child's life.

Previous studies revealed frequent iron and iodine deficiency in pregnant women, associated with still high prevalence of children with low birth weight and iodine deficiency. In order to improve the nutritional status of new born babies and pregnant women, in the last years, Romanian Government implemented programs and undertook various measures.

The present study aimed to assess the current situation of nutritional status of new born and pregnant women, to evaluate the results, and impact of interventions, together with development of recommendations to decision makers. The objectives of the study focused on iron and iodine nutrition, and on services of prenatal care and health care services provided to new born babies.

The implementation of this project was done by specialists from the Institute of Mother and Child Care, supported at the local level by specialists and decision makers from Public Health County Directorates, hospitals and maternity wards.

We deeply appreciate the technical assistance and financial support of UNICEF Romania throughout the whole implementation of this study.

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STUDY OVERVIEW

Adequate nutrition, meeting all specific needs, is one of the essential determinants of mother and child health, the right to adequate food being one of the fundamental human rights enshrined in many international documents.

The growth status is considered to be the best indicator of child wellbeing. It is conditioned by the socio-economic level and by the good health of the population, being a prerequisite for the sustainable development of society. Malnutrition, internationally acknowledged as an important indicator for monitoring the population's health status, has a negative impact on the growth status. Recent studies have indicated that child malnutrition is the first determinant of the "burden of disease" among the general population.

Over the past few years, special attention has been given, apart from macronutrients, to micronutrients, particularly to microminerals. Iron and iodine are nutritional factors of major importance in child health, already in the stage of fetal intrauterine life, a fact which accounts for the attention paid to their status in pregnant women and children.

International studies and practice point to the fact that an effective fight against child nutritional disorders, irrespective of the type of deficiency, is inextricably linked to the implementation of programmes based on a careful assessment and monitoring of the mother and child nutritional status and of factors impacting it.

As from 1990, the "Alfred Rusescu" Institute for Mother and Child Care, with technical and financial support from the UNICEF Representative Office, has carried out several projects addressing the nutritional status of the child, with focus also on the intrauterine life.

Particular mention should be made of:

- A cross-section survey assessing the nutritional status of non-institutionalized children under 5 years, conducted in 1991 on a national representative sample of 10,957 children;
- A survey based on the National Programme of Nutritional Surveillance (NPNS), conducted over 1993–2003, monitoring the nutritional status of under-5 children (a national representative sample of 83,000 children);
- A survey on maternal mortality and the use of prenatal consultations, carried out in 1992 on a representative sample of 1400 pregnant women/mothers;
- A pilot study on "Iron deficiency anaemia in young women" (1996), conducted in 2 Romanian counties and 3 residential districts of Bucharest;
- A survey on the nutritional status of schoolchildren in grade I (7-8 years old), carried out on a national representative sample (2120 pupils were investigated over 2002-2003);
- Surveys conducted in pilot groups concerning iron deficiency anaemia in young women (mothers of the children covered by the NPNS, 1995-1997), pregnant women and institutionalized children (1995);
- A pilot survey on the iodine deficiency in pregnant women (1387 women were investigated over October 2003-January 2004).
- Reproductive Health Survey, Romania 2004

All carried out surveys pointed to several nutritional deficiencies of young women, pregnant women and children. The findings of these surveys were the basis for an important intervention included in the 3-rd National Health Programme for mother and child, drafted by the Ministry of Health.

Here are some of the most relevant data highlighted by the surveys:

- 50% of children under 1 year had iron deficiency anaemia;
- the average birth weight was constantly of 3200g, 200g less than in the Western European countries;
- the prevalence of low birth weight children varied between 8% (1991), 6.6% (1999) and 7.7% in 2001;
- the “low height for age” indicator was three times bigger (7.3% for children under 2 years old and 8.5% for children aged between 2 and 5 years) than the accepted value of 2.3%; all this points to the presence, at that time, of chronic malnutrition in the surveyed population
- in respect of the nutritional practices of infants:
 - in 1991, over 90% of the infants were breastfed for more than 9 months;
 - at the same time, cow milk was introduced before the age of 6 months in 50% of the infants;
 - before the publication of the Reproductive Health Survey in 2004, no reliable data on exclusive breastfeeding had been available, yet after corroborating the early introduction of other liquids (tea, fruit juice, cow milk) or solids (fruit puree, farinaceous products) with clinical observations, one could say that exclusive breastfeeding had been practically unknown. Data from 2004 indicate that only 16% of infants aged between 0 and 5 months were exclusively breastfed.
- a 16% prevalence rate of the iodine deficiency was reported at national level, with higher rates of up to 25% in certain areas;
- as to the iodine nutrition status, the above mentioned surveys have pointed to a mild iodine deficiency in 7 years old children, while in pregnant women the iodine deficiency was mild among women in the urban areas and moderate in women living in the rural area.

This paper, based on an ample study that started back in April 2004, contains the findings of several surveys addressing major aspects of the nutritional status of children and pregnant women.

Under-5 children, schoolchildren in the first grade and pregnant women are considered to be among the high risk groups.

The goal of this survey was to assess the nutritional status of children and pregnant women in general, particularly the status of iron and iodine micronutrients. The survey starts from the assumption that the child development status, right from the moment of birth, is a most useful indicator for assessing the nutrition status and some specific deficiencies.

Health care services targetting these population groups have a major role to play in the early detection of and fight against nutritional disorders; such services should concentrate on monitoring the progress of pregnancy and on the child’s physical and mental development.

The survey has endeavoured to shed light on specific aspects related to the nutritional status of each group in the target population, while never losing sight of the common thread running through the various component parts.

The survey had the following overall objectives:

- To assess the nutritional status of pregnant women and children under 7 years
- To assess some nutritional practices in the surveyed population
- To evaluate the contribution of health care services in preventing nutritional deficiencies

This complex survey was made possible by the close work-together of experts from the “Alfred Rusescu” Institute for Mother and Child Care, the Public Health Directorates and

the School Inspectorates, with maternity hospitals, family doctors and nurses in the counties where the research was conducted.

Methodology

For the above mentioned objective to be attained, a descriptive cross-section epidemiological survey was carried out on national representative samples made up of the following population groups: pregnant /parturient women and their newborn babies, under-5 children and schoolchildren aged 6-7 years.

The urinary iodine and the blood haemoglobin levels were determined in women who were admitted to hospital in order to give birth. Also determined was the iodine in the table salt used in households where children aged 6-7 years live.

- The nutritional status of pregnant women was assessed by researching into the prevalence of the iodine and iron deficiency, as well as into some indicators related to the newborn baby's nutritional status.
- The nutritional status of under-5 children was assessed based on the birth weight (average weight and prevalence of low birth weight), the anthropometric indicators and the haemoglobin values.
- The nutritional status of children aged 6-7 years was assessed based on the anthropometric indicators and the prevalence of the iron deficiency.
- The nutritional practices of pregnant women and of children aged 6-7 years were assessed by researching into the prevalence of iodized salt consumption (and its determinants), while in under-5 children the research focused on the frequency and length of breastfeeding and on some aspects related to the introduction of bottle feeding and diversified complementary foods.
- The iodine content of salt was assessed based on the volumetric method to determine the content of potassium iodide according to the working methodology in the national standard SR 8934-9/1996 (iodine titration with potassium tiosulphate).

Measurements and definitions

In order to assess the health status of women and children covered by the study, the WHO/UNICEF/ICCIDD standards and the indicators recommended by WHO and CDC Atlanta were used as reference parameters. A special mention should be made concerning prenatal services, where the recommendation of the Ministry of Health in Romania was taken as a standard.

- **For the iodine status in pregnant women** and in children aged 6-7 years, the urinary iodine was determined and values over 100 micrograms per litre were considered to be normal. Severity degrees of the iodine deficiency are as follows:
 - $<20\mu\text{g/l}$ = *severe deficiency*;
 - $20\text{-}49\mu\text{g/l}$ = *moderate deficiency*;
 - $50\text{-}99\mu\text{g/l}$ = *average deficiency*;
 - $\geq 100\mu\text{g/l}$ = *no deficiency*.
- **In order to assess the iodine deficiency in newborn babies**, the neonatal TSH level, obtained from a whole blood sample through the dry-spot method, was determined. According to the WHO/UNICEF/ICCIDD standards, neonatal TSH levels exceeding 5 mU/l and accounting for more than 3%, were considered as deficiency. The severity degrees of the deficiency are given by the prevalence:
 - ≥ 40.0 = severe deficiency;
 - $20.0\text{-}39.9\%$ = moderate deficiency;
 - $3.0\text{-}19.9\%$ = mild deficiency;

- less than 3% prevalence = no deficiency
- **Anaemia** was assessed by **determining the blood haemoglobin level**. Values of at least 11g/dl were considered to be normal in pregnant women and under-5 children, while in the case of first graders the normal values were of at least 11.5 g/dl.
- **The growth status** was assessed based on some anthropometric determinations, namely the weight and the height. The three indicators, recommended by WHO and CDC for the evaluation of the nutritional status, were calculated: the weight for height (WH), the height for age (HA) and the weight for age (WA). The anthropometric indicators were assessed based on the Z score and the prevalence of children under -2DS/over + 2DS. The birth weight was registered and processed for children under 5 years.
- **Feeding practices** were appreciated based on the data collected by questionnaires. Particular attention was granted to breastfeeding, weaning, food diversification and the feeding of infants over 9 months.
- In assessing the **correct utilization and the underutilization of prenatal services**, respectively, both the number of prenatal consultations and the age of the pregnancy at the time of the first prenatal visit were taken into account. According to Ministry of Health, in Romania are recommended 10 visits during pregnancy and less than 4 visits are indicative of underutilization.

OUTCOMES

Iodine status

The iodine deficiency of pregnant women falls within the limits of the mild deficiency (the median was of 73 µg/l) and is higher in the rural area (68 µg/l), as against the urban area (78µg/l).

The iodine deficiency of the newborn baby, measured by determining the blood TSH, falls within the limits of a moderate deficiency (31.3% of the newborn babies had a TSH >5 mU/l), a fact which increases the pathogenetic risk.

A comparison of the pregnant woman's iodine deficiency – determined based on the urinary iodine level – with the newborn baby's iodine deficiency, determined on the basis of the blood TSH level, points to the fact that the deficiency is higher in the child than in the mother – moderate versus mild.

With schoolchildren aged 6-7 years, the iodine status tends to become normal, both in the urban and in the rural areas; the median of urinary iodine is over 100 µg/l. As to the dynamics of the iodine status in children, estimated on the basis of the median value of urinary iodine and the prevalence of various severity degrees, a favourable trend has been manifest ever since 2002. In 2004, the share of children without such deficiency was double as against values in the previous surveys.

The biochemical analysis of the salt used in the households of the surveyed schoolchildren has shown that most of the Romanian population (almost 97%) uses iodized salt, a fact which contributes to the improvement of iodine deficiency and can account for the improvement of the iodine status in schoolchildren. The survey has nevertheless evinced the fact that the current level of table salt iodization does not meet the iodine requirements during pregnancy. This calls, on the one hand, for an increase in the level of salt iodization and, on the other hand, for the need to analyse the timeliness of prescribing iodine pill supplements to pregnant women.

The positive role of salt iodization in preventing iodine deficiency is unanimously acknowledged. The effectiveness of salt iodization in eliminating iodine deficiency disorders (IDD) depends on the iodine concentration in salt; when calculating the optimal iodine quantity in salt, account should be taken of the fact that 20% of the iodine gets lost on the way from the producer to the consumer, while another 20% is lost by boiling.

According to Romanian Government Decision no. 568/2002, the optimal iodization of salt should be of 20+/- 5 mg iodine/kg of salt, 34 +/- 8,5 mg potassium iodate/kg of salt or 26+/- 6,5 mg potassium iodide/kg, which is also in keeping with the WHO, UNICEF and ICCIDD recommendations.

The levels of iodine in the salt consumed in the surveyed households (the component referring to children aged 6-7 years) demonstrate that the level of iodization of the salt used in households is below the recommended one (ranging between 14. 2 and 31 mg potassium iodate/kg salt, which corresponds to an interval of concentrations between 8.35 and 18.23 mg iodine/kg of salt). Thus, 63% of the families of children aged between 6 and 7 years are using insufficiently iodized salt; in the rural area, more than three quarters of the surveyed households are using insufficiently iodized salt.

The differences between the urban and rural areas can be accounted for by the choice of the type of salt used in food preparation (iodized/ non-iodized), the improper conditions of transportation and storage in the rural shops, the high consumption of non-iodized salt by the rural population (as a rule, salt which is not destined for human consumption or salt which is bought directly from the salt mines, before iodization), a fact which is related to education, mindset and resistance to novelty.

We draw attention to the fact that a sustainable elimination of iodine deficiency disorders in the population can be achieved only when 90% of the households are using

sufficiently iodized salt (over 15 mg iodine/kg of salt or 25.5 mg potassium iodate/kg of salt), yet Romania is still far from reaching this target.

Iron status

The iron deficiency anaemia in pregnant women continues to have a very high prevalence, with significant differences by area of residence, the worst situation having been registered in the rural area. The survey has evinced the fact that 42.5% of pregnant women were anaemic. The share of women with anaemia was significantly higher in the rural area as compared to the urban area, particularly in the case of anaemia under 9g/dl. More than half of the women underwent prophylactic treatment with iron and multi-vitamins, yet the length of the treatment was not recorded, while less than 30% of pregnant women took folic acid.

An undeniable degradation of the iron status has been registered at the age of one, as well as at the age of two. Anaemia is more frequent in children under 5 years: the average and median values of haemoglobin are lower than in the previous studies. Thus, the current average of haemoglobinemia, of 10.5 g/dl at the age of one, was lower than the value of minimum 10.6 g/dl, over 1990–1999 and worse than the one registered in 2000–2003 (minimum 11g/dl but also 11.2g/dl). A significant variance of the average haemoglobinemia has been registered depending on the area of residence, with an unfavourable situation in the rural area.

If we draw a comparison with the prevalence of anaemia of about 50%, at the time of the Nutrition Survey (1991) and of the NPNS (1993 – 2003), the prevalence of anaemia of 59.3% in one year old children and of 56.8% in children aged between 12–23 months, as indicated by the current survey, is quite worrisome. At the age of 59 months, the prevalence of anaemia is also high (22.7%), while 3.7% of the cases have a haemoglobinemia under 9 g/dl.

The prevalence of anaemia in children under 5 years was higher in the rural area (two thirds of the children aged between 1 and 2 years living in the countryside have a haemoglobinemia under 11 g/dl).

The more educated the mother is, the higher the median and average values of haemoglobin are, while the prevalence of anaemia decreases for all the three degrees of severity: 66% of the children whose mothers have less than 5 grades are anaemic; out of them, almost one fifth suffer from severe anaemia (Hb under 9g/dl).

At the same time, the children of mothers having more than one child are often anaemic: at the age of 1 and 2, the prevalence of anaemia in children of rank 4 was over 60%. A quarter of anaemic children of rank ≥ 4 suffer from severe anaemia.

Iron deficiency anaemia also has a high prevalence of 23.4% in schoolchildren, with the same significant differences by areas of residence, to the detriment of the rural area. The analysis of the evolution of anaemia prevalence in schoolchildren points to a negative trend, that is a higher prevalence in 2004 as against 2002.

We have to emphasize the fact that a high prevalence of anaemia in the population is indicative of a certain iron deficiency.

The situation is the more worrisome as it is a well-known that for each case of manifest anaemia, detected by the determination of haemoglobin, there is a corresponding case of latent anaemia, which becomes manifest in the wake of an aggression; any infection or bleeding – be it traumatic or surgery bleeding – triggers off a decrease of haemoglobin, therefore anaemia.

For these reasons, the 3-rd National Health Programme of the Ministry of Health includes, for more than four years now, interventions aimed to prevent iron deficiency anaemia in pregnant women and infants. The outcomes in 2004 were not the expected ones, as the prevalence of anaemia increased in all the surveyed population groups.

The progressive worsening of the iron deficiency, despite the fact that national programmes are in place to provide free of charge supplements to infants and pregnant women, raises the question of how effective these interventions are. Also to be addressed is the effective monitoring of the enforcement of protocols on the prophylaxis and treatment of

pregnant women and infants. Most useful is also the re-evaluation of the specific nutritional requirements of children, teenagers and pregnant women.

All these findings point to the fact that, Romania's economic growth and the reform in the health care system have had no positive impact so far on morbidity caused by iron deficiency.

Growth status

The average and median birth weight is around 3200 g, a value which is below the standards for the European countries (3400g). This situation has been reported constantly, starting already with the survey in 1991. Children in the rural area constantly have an average birth weight under 3180g.

At the same time, the prevalence of children with a birth weight under 2500g is high, both in the group of children under 5 years and in the group of the newborn babies of the surveyed pregnant women. After a downward trend from 9.1% in 1999 to 7.5% in 2002, a slight increase has been again registered. The prevalence of low birth weight was higher in children living in the rural area (at least 8%), in children whose mothers have a poor education (about 12%) and in children of rank 4 and more (11%, even 18% in some years).

The low birth weight is most likely due to a certain degree of intrauterine dystrophy in some of the children (undernourished mothers), as well as to an insufficient prenatal monitoring.

Birth weight is an important predictive element of child mortality and morbidity and, in Romania's particular case; it can also forecast the risk of child abandonment in maternity hospitals or health care units.

In respect of the anthropometric indicators (weight for height, height for age and weight for age), the prevalence of children under – 2DS and over + 2DS, respectively, as well as the Z score were calculated. WHO considers that the Z score for an ideal population would be 0, while for the reference population it should be 2.3%.

The most affected anthropometric indicator was **the weight for height**; the deteriorating values of this indicator point to the emergence of an acute malnutrition phenomenon. The low weight for height of children under 5 years had an overall prevalence of 4.4%, which ranks Romania among the countries with a "mild deficiency". Nevertheless, stress should be laid on the fact that in the previous nutrition surveys, this indicator systematically had prevalence close to (in 1991) or lower than (in 1993-2003) the reference value of 2.3%. The current survey evinces again the disadvantaged position of children in the rural area, where the prevalence of low weight for height is of over 5%.

It is estimated that prevalence higher than 5% is indicative of an increasing mortality in the near future. The low weight for height is a most telling indicator for a drastically low food intake, associated with a most precarious economic context or a prolonged severe disease, being a sensitive indicator of acute malnutrition when its prevalence exceeds 5%.

In the case of schoolchildren aged de 6–7 years, the low weight for height (under – 2DS) was registered in about 5% of the children, with a maximum of 7.7% in girls aged 7 years living in the urban area, followed by 6.1% in children aged 6 years, living in the urban area.

This finding should set alarm bells ringing: according to WHO data, whenever the prevalence exceeds 5%, the problem of some major nutritional deficiencies in the population concerned is raised. Weight loss in children in the surveyed groups means an insufficient nutritional intake of relatively recent date. Worth underlying is also the fact that thin children are ever more numerous, while there is still a high prevalence of short-statured children (although the prevalence of short-statured children is dropping, its values are still high). The low height for age indicator of children aged 2-5 years has considerably improved as

compared to the nineties, yet it is still below expectations. That is the reason why we consider that the growing prevalence of short-statured and thin children is a matter of concern.

The prevalence of **big weight for height**, correlated with a high risk of obesity, was systematically superior to the reference population, for all age groups, with no constant differences by sex and area of residence, an aspect that was also evinced by the previous surveys (4.2% of children under 5 years are overweight). These data must nevertheless be interpreted with caution: these children are also short-statured. The picture is therefore as follows: the weight gain is satisfactory, while the gain in height is slowed down. The emergence of this phenomenon might be due to the insufficient micronutrient intake, as a result of a monotonous, imbalanced diet, wherein potatoes and farinaceous products prevail. We should nevertheless emphasize that the situation has improved as compared to 1998, when 10% of children under 5 years were overweight.

The average prevalence of **low weight for age** was of 5.5% in children under 5 years, superior to the reference population, with no significant variance by sex and historical regions. For this indicator, too, a higher prevalence was reported in the rural area (6.3% of the children are too thin for their age) as against the urban area. Results are similar to those of the previous surveys, with no significant worsening with age. The low weight for age identifies subjects that evince a regress or a stagnating or slowly ascending weight curve.

The prevalence of **small height for age** of children under 5 years old, although superior to the reference value for all age groups, of both sexes, ranges between 5 and 10% ("mild deficiency"). The situation seems to have improved in 2004, both compared to the nutrition survey of 1991, as well as to the NPNS (1993 - 1998). A small height for age is indicative of a long term nutritional deficiency or a high morbidity level. At a population level, high values of a small height for age are indicative of a high prevalence of precarious socio-economic conditions and the frequent and early exposure to environmental hazards.

In the case of children aged 6–7 years, the persistence of a mild height deficiency is reported, which is close to the reference values.

The decreasing prevalence of small height for age corresponds, at population level, to an improvement in the socio-economic conditions and an increase in the living standards of the community.

Consequently, one could say that, in broad lines, the quality of child nutrition has improved in the period prior to the survey; the lower prevalence of short-statured children is proof thereof.

We still need to urgently identify the causes and circumstances of acute weight loss in some children and, consequently, to promptly intervene in order to stop this unfavourable trend, particularly affecting children living in the countryside.

Feeding practices

Infant feeding

An improvement in some infant feeding indicators has been registered as compared to 1993-2003, yet weaning, bottle-feeding and the introduction of complementary foods still occur at a too early age.

Breastfeeding: 92.2% of the surveyed children were breastfed for varying periods of time and only 7.7% of them were never breastfed, which ranks Romania among the countries with a good indicator, registering even a slight increase as compared to the data of 1991 and of 1993-2003. These values are close to those in the Reproductive Health Survey (2004), where the value of this indicator is 88%. Differences can be accounted for by the different samples used and the accepted margins of error for each survey.

In terms of the mothers' level of education, the largest share of children who were breastfed at least once is reported in mothers with 5-8 grades, followed by those with a higher education, while in terms of the child's rank, the smallest share of breastfed children is registered with children of rank 4 and over, so that this group is at risk of developing nutritional disorders. The average age of exclusively breastfed children (those who received only breastmilk, with no other solid or liquid foods) was 3.9 months, with a median of 3.2 months, which points to the fact that the measures promoting and supporting exclusive breastfeeding adopted in the past few years have had an impact and have led to a change in behaviour; however, exclusive breastfeeding has not yet turned into common practice, which calls for the further promotion of a more persuasive and penetrating strategy. Data from 2004, included in the Reproductive Health Survey, indicate that only 16% of infants aged between 0 and 5 months were exclusively breastfed.

Bottle-feeding ("artificial" or "mixed" feeding): the average age for introducing bottle-feeding was 4.2 months, with no significant differences in terms of sex, area of residence or level of education of the mother. Compared to the average age reported for the 1993-2002 period, it increased by almost one month (from 3.2 to 4.0 months). Although the average age at the start of bottle-feeding has increased, the median indicates that 50% of infants are fed on the bottle from the age of 3 months. In terms of child rank, we notice that the lowest average age when bottle-feeding is introduced is reported in children of rank 4 and over (3.65 months), which adds yet another risk factor for nutritional disorders, the more so as the large number of children is associated with a higher poverty level.

Weaning: *the average age of weaning* (end of breastfeeding for good) was of 6.66 months, with statistically significant differences only in terms of area of residence (almost 7 months in the rural area) and not in relation to sex, region, rank and level of education. ***The median age of weaning*** is 4 months, considerably lower than in the 1991 survey (9 months), which indicates that 50% of infants are weaned before the age of 4 months. ***The prevalence of weaned infants*** at the age of three months is 40.7%, and 50.6% at the age of 4 months. At the age of 6 months, the prevalence of weaned children reaches 63.1%, while at 12 months 87% of children no longer receive breastmilk. In 1991, 60% of children were weaned at the age of 1 year, but their percentage was over 92% in 1993 – 2003. These data are also confirmed by the outcomes of the Reproductive Health Survey of 2004, which shows that the average period of breastfeeding (the average age of weaning) was 6 months.

The share of breastfed children is influenced by a wealth of factors. Here are some of the barriers in the way of breastfeeding promotion: failure of health professionals to provide information to pregnant and puerperal women, lack of support to further breastfeeding in communities where women live, free-of-charge distribution, quite often without medical grounds, of infant formula.

On the other hand, the aggressive campaigns of infant formula manufacturers and distributors, in the absence of a legal framework firmly restricting advertising for breastmilk substitutes, have contributed to the early weaning of many infants.

In 2003, the National Strategy on Breastfeeding Promotion and the National Implementation Plan were developed and adopted; they include measures likely to increase the frequency and duration of correct breastfeeding of infants, thus paving the way for a good health status. The drafting of a law in application of the International Code of Marketing of Breastmilk Substitutes shall regulate aspects related to the aggressive promotion of products within the scope of the Code which are barriers in the way of breastfeeding.

Complementary feeding (diversification): *the average age of infant's food diversification* is quite early (4.04 months) and is practically the same as the one reported in 1993-2003, with statistically significant differences by area of residence, child rank and education level of the mother. The earliest food diversification occurs in infants living in the rural area, children of rank 4 and over, as well as children whose mothers have an average level of education. It may seem quite a paradox that food diversification takes place earlier in

the countryside, where breastfeeding traditions have been deeply rooted, as well as in the case of higher rank children who, as a rule, come from poor families, with a limited access to foodstuffs, in general, and to adequate products for complementary feeding at this age, in particular. Consequently, higher rank children in the rural area run a greater risk of nutritional and infectious morbidity. At the age of 3 months, 36.8% of infants receive complementary feeding, while at 4 months their share increases to 70.9%, with no significant differences in terms of the surveyed variables.

The introduction of various foodstuffs in the infant's diet: the fruit puree is the first to be given to infants as complementary food by most families (65%), followed by vegetables (17.8%) and cereals. Most of the foodstuffs were given to children at a very early stage, their choice having been inadequate more often than not (for instance: gluten cereals and cow's milk products introduced before the age of 6-7 months).

Breastfeeding promotion practices within prenatal services and in maternity hospitals

Accessibility of rooming-in (actually various forms of "mother and child wards"): although the benefits of rooming-in have long been demonstrated by specialist literature, only 41.4% of the mothers covered by this survey have indicated they had benefited from the rooming-in system. This means that more than half of the infants born to mothers covered by this survey did not stay with their mothers all the time from birth till discharge from the maternity hospital. The share of mothers who had their babies with them throughout their stay in hospital was smaller in women who live in the rural area, as compared to the urban area.

Promotion of breastfeeding upon request: almost 40% of the mothers said that, while being in the maternity hospital, their babies were breastfed whenever they requested, a proportion matching the percentage of those who had access to the rooming-in system. This means that 60% of the infants, although breastfed, were subject to some schedule constraints, exerting a negative impact on breastfeeding. Data have indicated a definitely higher prevalence of breastfed babies upon request in Moldavia, as against the other regions of the country. This is to be matched with a higher percentage of infants who benefited from the rooming-in system, prevailingly developed in that region by UNICEF and the Ministry of Health, particularly over 2002-2004.

Information provided by health professionals concerning the promotion of breastfeeding as the best way to feed a baby: health professionals provide some information to young mothers about the importance of breastfeeding for the baby's health, yet a quarter of the mothers said they had not received such information from the health care staff. The prevalence of mothers who said they had not received this kind of information is similar in the rural and urban areas, yet there is a difference in terms of the mothers's level of education and the rank of the child: the least informed are mothers with a poor education and/or having many children, that is the population group running a higher risk.

Measures likely to stimulate and maintain lacteous secretion: likewise, more than one quarter of the mothers stated they had not received any information about ways to stimulate and maintain the lacteous secretion, with a higher prevalence of uninformed women in the rural area; in this case, too, the poorer the level of education, the higher the prevalence of uninformed mothers. No significant variance has been reported in terms of other surveyed variables.

Diet of pregnant women

Diet of pregnant women: 25% of the surveyed pregnant women have a diet lacking at least one of the food groups. The inadequate nutritional intake, the qualitatively and

quantitatively imbalanced diet, with a low consumption of foodstuffs such as milk and dairy products, meat, fish, can trigger off some nutritional deficiencies.

The main sources of information for pregnant women during pregnancy were, in the order of the frequency they were mentioned with: the family doctor (73%), the nurse assisting the family doctor (50.7%), relatives/acquaintances (18%) and the obstetrician (11.1%). This order is the same by areas of residence (with somewhat smaller prevalence for the rural areas). The survey points to a far too small commitment of the gynaecologist-obstetrician doctor, although this specialist is more often than not the most important point of reference for a pregnant woman, particularly in the urban area.

Use of prenatal care services and their content

Prenatal consultations are a mechanism for the early detection and prevention of some health problems in pregnant women; it also enables doctors and nurses to convey educational messages for the benefit of mother and child health.

On the whole, 68.8% of the mothers had their first prenatal consultation in the first trimester of pregnancy (79.2% in the urban area and 58.5% in the rural area). Almost 6% of women covered by this survey did not go for a prenatal consultation during their latest pregnancy. Most pregnant women went for their first prenatal visit in the second (34.6%) or third month (23.4%) of pregnancy. These data are also confirmed by the findings of the Reproductive Health Survey of 2004, according to which 74% of the surveyed women had prenatal consultations in the first trimester of pregnancy. Since 1999, the proportion of women who had their first prenatal visit during the first trimester of pregnancy has increased, for both women in the urban and in the rural areas. The level of education significantly differentiates mothers in this respect. More than 90% of the mothers who had completed at least secondary studies went for a prenatal consultation in the first trimester of pregnancy, as against only 38.6 % of the mothers with less than 5 grades.

As to the **overall number of prenatal visits**, 33.3% of the women had 1-4 consultations, while the rest went for such prenatal visits more than 4 times. The Reproductive Health Survey of 2004 points out that the proportion of women who had 4 or more prenatal consultations rose from 59% in 1999 to 76% in 2004, in both urban and rural areas.

Most of the women who went for prenatal consultations (64.6%) said that during these visits they had been advised to breastfeed their baby.

As to the measures promoting a healthy nutrition, only 15.2% of the mothers said that a doctor or a nurse had advised them to use **iodized salt**.

As to the content of prenatal care, this survey only focussed on information related to feeding: breastfeeding and the use of iodized salt. This information can be complemented with the data in the Reproductive Health Survey of 2004: women reported having had their biological samples taken for tests (80%), having had an ultrasound examination (76% in 2004 as compared to 53% in 1999), or having been advised to take an HIV test (one third of the women). As regards this latter aspect, less than one third of the women tested for HIV also received counselling, which means that only 10% of the pregnant women received counselling when being tested for HIV. Four out of five women reported that their doctor had recommended taking iron and vitamin D supplements for the prophylaxis of anaemia and rickets, and 95% of them reported actually taking those supplements. Worth noticing is the fact that there is no mention about any information concerning breastfeeding as a component part of the prenatal consultation. Nevertheless, all these data do not match the anaemia rates in pregnant women as highlighted in this survey.

FINDINGS FROM THE STUDY

Findings in respect of the surveyed population

General aspects

The analysis of the features of the surveyed population draws attention to some aspects that need to be taken into account when developing interventions for health promotion and for improving the nutritional status of women and children. We mention that about half of the women who give birth live in the rural area.

Pregnant women and children cumulating the most significant social risks (poor level of education, large number of births, low socio-economic status of the mother) live in the countryside and/or are of Roma origin.

A significant part of the surveyed indicators point to an unfavourable situation in the regions of Moldavia and Muntenia (economically disadvantaged areas), as compared to Transylvania (a region having an economic standard above the country average); we mention that data from the afore mentioned regions is not statistically representative for these areas.

Iodine status

A survey conducted by Population Services International in 2002 evinced the fact that only 53% of the population used iodized salt. The data in this survey clearly indicate how effective the measures of salt iodization are, as 97% of the households with children aged 6-7 years use iodized salt. The iodine deficiency in pregnant women stays within the limits of a *mild deficiency*, yet it is greater in the rural area, as against the urban area.

A comparison between the findings of this survey and the data obtained in 2003 on a sample of women in their first trimester of pregnancy shows that the iodine deficiency is still present, despite the fact that the legislation on the universal iodization of salt for human consumption has been enforced in the past two years.

The current level of table salt iodization does not meet the iodine requirements during pregnancy not even in women who use iodized salt alone.

The iodine deficiency of the *newborn baby* falls within the limits of a *moderate deficiency*, therefore it is more severe than that of the mother.

A comparison between the iodine deficiency in pregnant women and in schoolchildren shows that, in the latter, the median of urinary iodine, both in the urban and in the rural areas, stays within normal limits, while the median of urinary iodine in pregnant women falls within the limits of a mild deficiency. This situation points, on the one hand, to the imbalance between the increased iodine requirements of pregnant women and the insufficient intake, as a result of several factors, such as the inadequate feeding practices and the consumption of insufficiently iodized salt; on the other hand, it points to a positive trend of reducing the iodine deficiency in children, as a consequence of iodization of table salt and of the salt used in baking bread.

Iron status

Anaemia in pregnant women and in children aged 1-7 years continues to have a very high prevalence and has an upward trend in comparison with previous surveys; there is a significant difference by areas of residence, with a higher prevalence in the rural area. The reported values are alarming and they point to a public health issue.

The survey has researched neither into the way in which pharmaceutical iron preparations are administered, nor into the length of treatment, yet clinical observations lead to the conclusion that the prophylaxis of iron deficiency anaemia is not applied according to the protocols developed by the Institute for Mother and Child Care (I.O.M.C.)

Growth status

The children's growth status is impaired, proof thereof being the average birth weight that is smaller in Romania when compared to international standards, as well as the high prevalence of infants with a low birth weight.

The children's low weight for height has a higher prevalence than in all the other previous surveys, a fact which draws attention to the recent emergence of some nutritional deficiencies affecting particularly the population aged 2-7 years.

There is a high prevalence of big weight for height, the same as over 1993-2003, this phenomenon, too, being triggered off by an imbalanced diet; consequently, future nutritional programmes should focus on this aspect.

The prevalence of small height for age falls within the limits of a mild deficit, a slight improvement having been registered as compared to the alarming situation of 1993-2003. There are less obvious signs of a chronic dietary deficiency.

Feeding practices

A large proportion of pregnant women still have an improper diet, with a low intake of foodstuffs rich in proteins, iron and iodine.

An improvement in some of the indicators related to the infant's feeding has been registered in comparison with the findings of the NPNS, yet bottle feeding and weaning occur too early in the infant's life; likewise, the average age when food supplements are given to the baby is too small.

Promotion of breastfeeding during prenatal care and in maternity hospitals

According to the findings of this survey, an insufficient number of women receive information and support in respect of the initiation, promotion and continuation of breastfeeding while receiving prenatal care or in maternity hospitals. Unfortunately, the very group of population that mostly needs such information, namely women in the rural area and having a poor education, is the least informed.

On the other hand, the very structure of maternity hospitals, with a share of rooming-in facilities of only 41%, hinders bonding between mother and child and is a serious obstacle in the way of exclusive breastfeeding and breastfeeding upon request.

Though statistics might seem optimistic at first sight (upon discharge from maternity hospitals, 93% of the babies are breastfed), the fact that 40% of the infants are weaned at the age of 3 months indicates that the promotion of breastfeeding in maternity hospitals is not subsequently backed by support services outside the hospitals, when mother and child go back home.

Prenatal visits

Despite some encouraging signs, such as the increase in the use of prenatal care services and in the number of prenatal visits in the first trimester of pregnancy, an important proportion of pregnant women (32%) had their first prenatal consultation only in the second trimester of pregnancy.

6% of the women covered by this survey did not have any consultation during their pregnancy.

Worth noticing again is the fact that the very population group that needs guidance and support, namely the population with a poor level of education and living in the countryside, benefits to a lesser degree of these services.

All these findings are important, the more so as the low-scale use of prenatal services and the insufficient attention paid by health professionals to nutritional issues have negative consequences on the health status of the pregnant woman and the newborn baby, such as the iodine deficiency, the iron deficiency anaemia and the low birth weight.

RECOMMENDATIONS

General aspects

The complex nature of development requirements during pregnancy and in early childhood calls for an interdisciplinary and intersectoral cooperation, as well as for synergy measures to prevent the emergence of nutritional disorders.

The staff coming into contact with pregnant women and with families with children should be trained so as to know better and to prevent nutritional deficiencies. The in-service training of doctors and nurses should be a priority, with stress on the need to promote breastfeeding and a healthy diet.

The updated practical guidelines could be a major contribution in this respect; they should prevalently focus on infant feeding and should be circulated in a sufficient number of copies.

In parallel, the development and generalization of a network of community health nurses at an all-country level could contribute to a better surveillance of pregnant women throughout the country, a faster identification of vulnerable families, the easier access of such families to the health care and social services they need. As far as nutrition is concerned, the network of community health nurses could contribute to educating pregnant women and supporting mothers to breastfeed their babies; it could also educate mothers in respect of food diversification and the adequate feeding of their babies, so as to prevent anaemia, rickets and other diseases caused by an improper diet for child's age and development.

The information campaigns on a healthy lifestyle and diet can contribute to improving the behaviour of a population evincing a still high percentage of poorly educated individuals. Pertinent and convincing information of communities might also offset the consequences triggered off by the distribution of breastmilk substitutes and of other infant formulas, which may limit the frequency and length of breastfeeding.

Specific programmes, targeting rural women and combining assistance and education services should be initiated, a fact which would help this group of population get integrated into prevention activities.

The promotion of initiatives likely to retain young girls in school, at least in the ten years of compulsory education, could raise the level of education of future mothers.

This aspect is the more important as in the past few years the Ministry of Education has started a programme of education for health in schools. The programme, which is now in a pilot stage, covers 10,000 of the 24,000 schools in Romania. The curriculum is optional, yet the Ministry of Education plans to generalize the programme and to include it in the compulsory curriculum. The programme spans all the 12 years of pre-university education, with adequate messages for each age.

As regards breastfeeding, the implementation of the MatRom programme of the Ministry of Health, pursuing the generalization of the rooming-in system in all maternity hospitals in Romania, would be a first step towards creating an enabling environment for the promotion of breastfeeding. It is also advisable to rapidly develop the "Baby Friendly

Hospitals” network, which also involves the training of all health professionals coming into direct contact with the mother and child.

Nutrition surveillance at an all-country level would be most useful; it should be based on the NPNS methodology and should be followed by data processing in sentinel stations, operating according to the same methodology, in cooperation with and under the coordination of the Institute for Mother and Child Care.

It is recommended that priority be given to the establishment of “sentinel stations” in the areas at risk. The processed data concerning the frequency of breastfeeding and the children’s feeding status shall be promptly communicated to decision makers.

Prevention of iodine deficiency

As the iodized salt consumption has proved to be useful, yet insufficient to prevent the iodine deficiency, we recommend the increase and monitoring of the salt iodization levels, so that the losses occurring on the way from the source to the consumer, through the processes of packaging, storage and cooking foodstuffs in households, should not affect the adequate iodine intake.

Likewise, the development and implementation of an efficient mechanism to monitor the salt quality, with regular reports drafted, shall contribute to the identification and correction of all cases of non-compliance with the legal provisions.

The growing iodine requirements of pregnant women call for the administration of iodine supplements, in addition to the use of iodized salt, in order to prevent any deficiency. The doses and the ways of administration should be addressed in a protocol on the prevention of the iodine deficiency in pregnant women, ensuring the unitary and correct approach of this issue at national level.

The prenatal consultation must include an evaluation of the iodine deficiency, as well as some prophylactic actions. Thus, it would be useful for the mother to be advised on the importance of iodized salt consumption and of an adequate diet, in order to prevent an impeded brain and motor development of the child.

Information campaigns must be further conducted so that the population be aware of the need to use iodized salt; information in this respect should also be included in education programmes pursuing the promotion of health.

In order to prevent the early emergence of deficiencies in the child’s development caused by hypothyroidism, the determination of TSH levels in newborns should be generalized throughout the country, both as a screening test for hypothyroidism, as well as a way to assess the iodine deficiency in the population.

Anaemia prevention

The progressive worsening of the iron deficiency, although programmes are in place to give free supplements to children and pregnant women, calls for a more careful evaluation and monitoring of the way such interventions are implemented, as well as for their adjustment to various regions and biological statuses.

The prophylactic and curative administration of iron and folic acid to all pregnant women must be done according to the protocols of the Institute for Mother and Child Care, approved by order of the minister of health.

The haemoglobin status needs to be further monitored, particularly in children under 5 years, because of the very high prevalence of iron deficiency anaemia, registering a growing trend as compared to the previous years, as well as considering the disparities at territorial level and depending on the mother’s educational level. In this sense, the private practices of family doctors should be endowed with haemoglobinometers, in order to facilitate the detection and monitoring of anaemia in children and pregnant women.

As the low iron intake, both quantitatively and qualitatively, is the first cause of iron deficiency anaemia, intersectoral cooperation must be developed in order to adopt synergy measures targeting the adequate feeding of children and pregnant women, as well as the production of iron-enriched foodstuffs.

The experience of other countries indicates that the most effective intervention in preventing anaemia, as a public health issue, is the iron fortification of flour. In Romania's case, this implies, on the one hand, the establishment of an intersectoral group, made up of representatives of the health care sector and representatives of manufacturers and distributors and, on the other hand, the development and adoption, as soon as possible, of the legislation providing for the mandatory iron fortification of flour.

Improvement of anthropometric indicators

As the main factors influencing birth weight are the surveillance of pregnancy, the quality of prenatal care and the socio-economic status and education level of the family, stress should be laid on the development of services for the surveillance of pregnant women and the increase of their quality, concurrently with the improvement of social protection measures targeting pregnant women, particularly those with a poor education or having a precarious economic status.

Family planning services need to be operationalized, so that the option to have a baby should be an informed and well-grounded decision.

Intersectoral collaboration should be stepped up in order to put in place a coherent system, likely to provide socio-medical, educational and economic conditions to families that are going to become parents, with stress on the development of community services for the vulnerable families.

The need to improve anthropometric indicators calls for the further monitoring of the children's growth status at national level, so that any possible worsening of the situation might be detected in an early stage. At the same time, a system should be established to allow the development and operative implementation of efficient and effective interventions, considering that malnutrition is the first cause of burden of disease among the population, while the children's growth status is a predictive factor for their health status and efficiency in adult life.

The impairment of the weight for height is a sign of acute starvation, particularly among the disadvantaged population; this problem needs to be identified and eliminated as soon as possible by measures targeting the specific needs.

The mild deficiency of the weight for height and the height for age, as well as the increasing prevalence of the big weight for height, are a sign that calls for the continuation and development of strategies seeking the improvement of the health status by education, improved access to the basic needs for the disadvantaged population groups and by development of the preventive component of health care services for mother and child.

Development of social and health care integrated services

The development of social and health care preventive services and an increased accessibility to such services are a strategic line of action for the improvement of the health status of mother and child.

The development of intersectoral cooperation is necessary for the adoption of complex synergy measures to improve the growth status. This calls for the development of some basic, accessible services and for an enabling legislative framework. In this sense, we recommend:

- * the promotion of breastfeeding by the generalization of the rooming-in system in the maternity hospitals all over the country
- * the partial or full extension of the Baby Friendly Hospital standards to as many maternity hospitals as possible; lending support for a growing number of maternity hospitals to be designated as Baby Friendly Hospital
- * the adoption of the national law concerning the provisions of the International Code of Marketing of Breastmilk Substitutes
- * the development of standards and protocols for the health care services supplied to pregnant women and their infants
- * including training for the promotion of breastfeeding in the formal training of doctors and nurses
- * the generalization of the community health nurses network, providing support and nutritional education services, particularly to vulnerable groups

Communication between doctors – family doctors and the ancillary medical staff - and patients should be developed, also by providing material incentives to health professionals so that they also contribute to the education of pregnant women.

Legislative aspects

Our research has led to the following conclusions:

- * it is absolutely necessary to give up the distribution of infant formula in the absence of medical justification (according to WHO criteria);
- * maternity and child allowances should be provided, thus allowing families to take proper care of their children;
- * the family should be encouraged, including by material incentives, to be more committed to the prophylactic care of the pregnant woman and of the child.

In this sense, once transposed in our national law, the International Code of Marketing of Breastmilk Substitutes shall create the formal framework likely to limit the influence of the aggressive policy promoted by the manufacturers of infant formula and food supplements (complementary food). This is the more necessary as Romania is one of the 118 countries that signed World Health Assembly Resolution 34.22 in 1981, whereby the International Code of Marketing of Breastmilk Substitutes was adopted as an official document. By this resolution, the signatory countries have pledged to adopt in the shortest time possible the national legislation including the provisions of the Code. Romania has not transposed it so far.

In order to prevent anaemia in the population, legislation should be drafted as soon as possible to provide for the iron fortification of flour, as it is a well known fact that this measure is the most effective public health intervention.

Mother and child feeding should be part of a coherent policy, promoting the health of the child and of each family member as fundamental human rights.