

## **Nutrition Status of Children in the DPRK and Relevant UNICEF Programme**

**(a brief non-technical paper presented at the 10th Anniversary International Symposium of the Korean Society of Community Nutrition, Seoul, October 2005)**

Taufique Mujtaba

*Deputy Head of DPRK office, UNICEF*

### **Background and history**

With a population of approximately 23 million, the democratic Republic of Korea (DPRK) has approximately 2 million children less than 5 years of age.

From 1960 to 1980, the DPRK was progressive in the social sector, providing good quality health services, and free and universal education. Impressive progress was made in the way of reducing under-five mortality rate (U5MR). Between 1960 and 1996, this figure was drastically reduced from 120 to 23 per 1000 live birth. While progress had been made, the country also encountered an economic crisis in the 1990s, as a combined effect of the breakdown of the overall economy, and a series of natural disasters such as floods and droughts.

With increase in food availability, provision of the most vital medicines, successes in immunization and vitamin A supplementation programmes, there have been tangible improvements in the nutritional status of children in DPRK over the past few years. Objective evidence for this comes from the National Nutrition surveys of 2002 and 2004, conducted by the Government of DPRK, and jointly assisted by the United Nations Children's Fund (UNICEF) and the World Food Programme (WFP).

However, the main causes of child mortality continue to be diarrhea and respiratory infections combined with malnutrition. Stunting and levels of malnourishment are still very high with 42% of all children below the age of 7 years being stunted.

In 2002, 70000 children were found severely acutely malnourished (wasted) and at immediate risk of death if not provided with hospital-based rehabilitation. This figure was reduced to 40000, according to the 2004 survey findings.

In addition to food, the quality of water also influences the health of children. In the DPRK a large portion of the population relies on piped water supply. The deterioration of water supply systems has meant that the supply of water is effectively meeting only about a quarter of the needs. For many of the cities, the infrastructure has completely deteriorated, and water is only available 2-4 hours per day. The problem is compounded by an acute shortage of energy on which most of the supply systems are totally dependant.

Women account for 1/3 of the workforce in the DPRK. Practically all children are placed in

state institutions. Institutionalized childcare is in very poor condition. These institutions suffer from lack of food, equipment, fuel for heating, and staff (there is approximately 1 person for every 10 children, and many caregivers are badly in need of updating their knowledge and skills in child-care and practices). This has a large impact on the general wellbeing, nutritional status, growth and development of children.

There is still no proven indigenous capacity to in the country to effectively address the underlying causes of malnutrition.

In the last nine years large amounts of food aid and general humanitarian assistance have been distributed, and consequently, the health status of beneficiaries has improved. The effects of long-term food shortages, coupled with the spread of preventable communicable diseases, are nevertheless still evident in the generally low stature of the population. Using global assessments, and internal assessments, such as rudimentary household food economy analyses, field observations and focused group discussions, it has been assessed that certain groups of people are most at risk.

Among them, expectant mothers and their unborn babies, children under five (especially children below two years), and nursing mothers are especially vulnerable. A significant share of the population suffers from cross-cutting vulnerability caused by insufficient quantity and quality of food that would ensure a healthy life, compounded by poor quality and often antiquated and degenerated essential health services, and inadequate water, sanitation, and education facilities/systems.

The degree of vulnerability each of these groups faces is dependent on a many factors. However, assessments usually only reflect the observable aspects of apparent vulnerabilities, e.g. numbers of pregnant nursing women, chronic malnutrition rates, agricultural yield, and available PDS rations. There is a need to work at all levels within communities for programmes to effectively help reduce vulnerabilities and support local capacities.

The 1998 Multiple Indicator Cluster Survey (MICS) and Nutrition Survey conducted by the Government, UNICEF, WFP, and the EU revealed that severe malnutrition, particularly in children, was exacerbated by other health problems such as diarrhoea, caused by unsafe drinking water and poor sanitation. The joint Government nutrition survey, which was undertaken in October 2002, followed up on the nutrition survey of 1998. The survey showed that malnutrition rates among children in the DPRK have improved considerably over the past four years. Although the 2002 assessment is not strictly comparable with the earlier survey carried out in 1998, clear positive trends were discernible:

- The proportion of children underweight (weight-for-age) had fallen from 61% in 1998 to 21% in 2002;
- Wasting, or acute malnutrition (weight-for-height), had fallen from 16% to 9%;
- Stunting, or chronic malnutrition (height-for-age), had dropped from 62% to 42% (adjusted prevalence)<sup>11</sup>.

## Summary of the nutrition surveys:

**Nutrition Survey 1998:** The nutritional status of children at national level (accessible counties) was conducted for the first time in 1998. The survey was jointly conducted by the Government of DPRK, EU, UNICEF and WFP. The aim of the survey was to provide information on nutrition situation of children to the Government and its international partners.

A multi-stage cluster sampling method was used in the survey. A total sample of 3,600 households was included in the study. A multi-stage sampling was used to identify clusters at Ri/Dongs level. At the first stage, 30 counties were selected with probability proportional to size (PPS), and from 30 counties 120 Ri/dong were sampled. In the second stage, 30 households were selected, using systematic sampling method, from 120 sampled Ri/Dong. Children aged 6 to 84 months were included in the survey.

**Findings of the survey:** The survey reported prevalence of wasting 16%, stunting 62% and underweight 61%. In the 1998 survey, children aged over three year were more than 70% stunted, which is a reflection of the famine conditions that prevailed in 1995/96 when they were in their foetal and infant growth phases.

**Nutrition Assessment 2002:** The second nutrition survey was conducted jointly by the Government of DPRK UNICEF and WFP in 2002. The objective of the survey was to assess the food and nutritional status of children aged up to seven completed years of age (0-83 years) and of their mothers in seven provinces and three municipal cities; and also strengthen the capacity of Central Bureau of Statistics to conduct the similar survey.

A multi-stage sampling procedure was used in the survey. In the first step 20 Ris or Dongs, primary sampling unit (PSU), in all seven provinces and three cities, were selected using urban rural proportion. In the second step, 30 households from each PSU were selected. From each selected household, the youngest child was included in the survey.

The quality of the anthropometrical data was checked by examining the standard deviation of the mean value of the Z-score for height for weight, weight for age, and height for age. The values obtained are very acceptable, being 0.99 for the height for age measurement, 0.86 for the weight for age measurement, and 1.01 for the weight for height measurements. These values are within those accepted internationally. This accredits to the quality of the anthropometrical measurements and the value of carrying out a standardization exercise with the anthropometric before doing the survey.

**Findings of the 2002 survey:** The survey reported the prevalence of underweight 21%, wasting 8% and stunting 42%. A remarkable reduction in child under nutrition seems to have occurred in DPRK between 1998 and 2002 as the rate of child under nutrition fell from 60% to 21% during that period. The 10% a year reduction in child under nutrition rates are far superior to anything else reported in the literature previously and 200 times greater than that observed in the other counties of the Asian region in the last decades.

(Although the 2002 survey is not strictly comparable with the previous survey as they are derived from different population samples and represents different universe, they are still very large surveys that are representative of at least 70% of the national population living in accessible areas.)

Although there has been considerable improvement over the period, the nutritional situation in the DPRK indicated a need to continue the supports from all agencies concerned. The results suggested that the food aid was effective in controlling child malnutrition in DPRK at least in the accessible areas. However, the prevalence rates encountered in the ten provinces/cities, based on the low height-for-age or stunting classification of malnutrition, were "Very high" (>40) according to WHO criteria. Furthermore the continued existence of severe wasting (<3 Z-scores W/H) in 3% of the children was a sign of delicate nutrition problem.

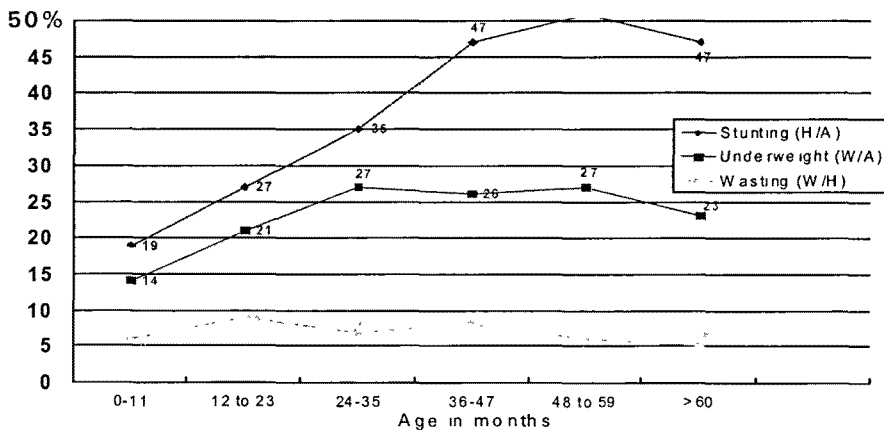
Further analysis of the data showed an association between child malnutrition and maternal nutrition, which suggests the interventions during and before pregnancy in order to improve child

Analysis of the data showed an association between child malnutrition and maternal nutrition, which suggests the interventions required during and before pregnancy in order to improve child malnutrition.

**Nutrition Assessment 2004:**

In the 2004 survey, the same methodology of 2002 was applied, except the age group covered was 0-72 moths. The 2004 survey report the stunting rate of 37% wasting 7% and underweight 22%.

**Prevalence of malnutrition by age groups - 2004**



Trends in child malnutrition: expressed in terms of “under weight” and “stunting indicators”.  
**Under weight (wt/age):** There has been a drastic reduction in the prevalence of underweight between 1998 and 2002 a reduction of 10% per year. However, between 2002 and 2004, the prevalence rate has slightly higher, but not statistically significant.

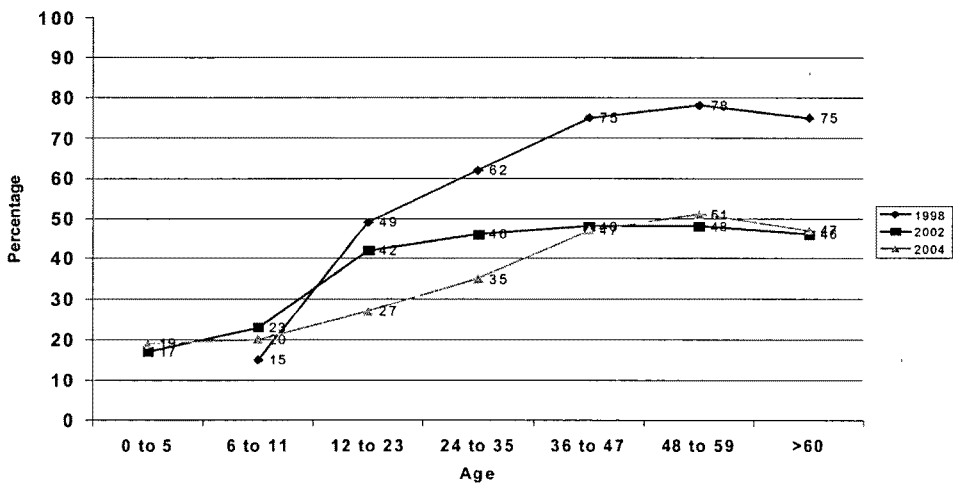
**Stunting (ht/age):** Between 1998 and 2002, the reduction in stunting was 5% per year, which is remarkable. In 2002 the stunting rate is down to 46% in over three years old children, representing a drop of 40% in malnutrition rates in these older children over the four year period (1998-2002). It was more difficult to compare the changes in younger age group children, because the 1998 survey excluded children less than 6 months. However there is evidence of improvement across the years in the younger age groups with stunting rates lower in 2002.

In stunting, though the prevalence rate is less in 2002 than in 1998, there is a continuing increase in the prevalence of stunting of children through to 48-59 months. This figure reveals that close to 50% of the children in DPRK were stunted as they reached school age.

Table 1. Stunting, wasting and under weight in Children in DPRK

Indicators	1998	2002	2004
Wasting (wt/ht )	16.	8.0	7
Stunting (ht/age )	62.	42	37
Underweight (wt/age)	61	21	23

Trends of stunting by age group–1998, 2002 and 2004 survey



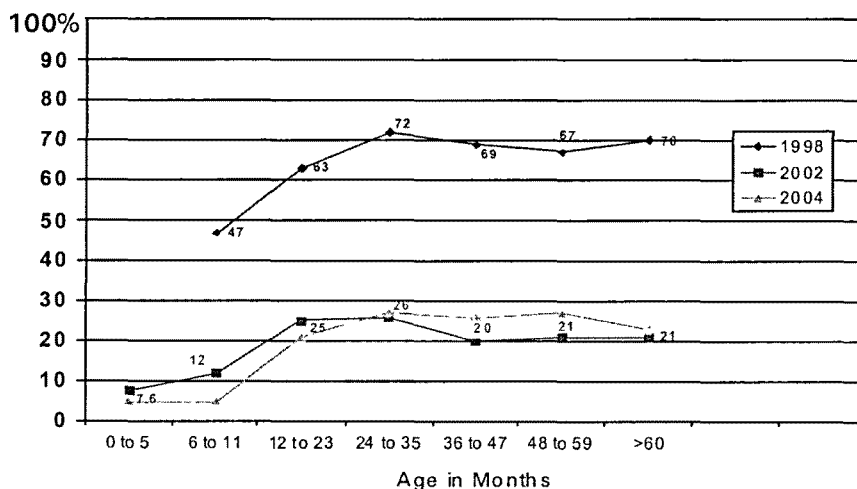
The above graph shows a drastic reduction on child malnutrition between 1998 and 2002 in stunting. However, between 2002 and 2004, there is some reduction in the

stunting rate. The age specific trend in stunting shows that there was no change in the stunting rates between the surveys for children 0-11 months. Stunting in this age group is largely influenced by the foetal growth and maternal malnutrition. The association between small birth size and stunting observed in the survey of 2004 indicates that more efforts are required to improve maternal nutritional status for the prevention of stunting.

Between 2002 and 2004, the stunting rate in children 12-35 months has fallen sharply (40%) in 2004. Stunting in these children is largely the result of inadequate dietary intake and high level s of infectious disease morbidity often found at these ages. If the progress in reducing stunting continues the overall prevalence of stunting will fall by substantial amount in future surveys.

Over the two years period (2002-2004), the stunting rate in the children 36-71 months did not change although the prevalence is lower in the younger age group. This finding is not surprising because many of these children would have been stunted at younger ages as was found in the 2002 survey. Children usually do not exhibit catch up growth beyond three years of age even if their diets improve. So it is critically important to provide interventions that have an impact on the growth of very young children.

### Trends of underweight by age group -1998, 2002 and 2004



#### Factors associated with child malnutrition:

- The 2004 survey found an association between childhood malnutrition (stunting) and consumption of poultry or meat. There was a 15% higher prevalence of stunting in children from those households with the lowest frequency of intake in consumption.

to those with the heights frequency of intake.

- The prevalence of stunting in children from those households with the lowest intake of rice and rice products was higher than children from households with the highest intake.
- Maternal malnutrition was associated with an increased of child low height for age. The prevalence of stunting was 22% higher than children of malnourished mothers, there was an association between mean height for age and maternal malnutrition.
- The prevalence of stunting increased by 62% as reported perceived birth size decreased.

#### **Maternal nutrition:**

Data on maternal nutritional status were collected only in 2002 and 2004 surveys. In both surveys, mothers nutritional status were measured by mid-upper arm circumference and hemoglobin level. There is no apparent improvement in the nutritional status of mothers between 2002 and 2004, with almost one in three women with young children remain malnourished and anaemic.

#### **Major conclusions:**

- Both the surveys of 2002 and 2004 indicate an improvement in child nutritional status, however the level of malnutrition (stunting and underweight) is still high according to WHO criteria.
- There has not been an apparent improvement in maternal nutritional status over the period.
- Both surveys indicate the association between maternal and child nutritional status. This suggests the need to focus on maternal nutritional improvement through interventions before pregnancy and during pregnancy for the prevention of child malnutrition.

#### **UNICEF in DPRK and its nutrition interventions at community level**

UNICEF started providing humanitarian assistance to DPRK in 1985. It opened an office in DPRK in 1996 and started one-year programmes of assistance. Like the other UN agencies, UNICEF concentrated its support on humanitarian aid. Health and nutrition of children and women remained a priority. Specifically, UNICEF assisted in the:

- Treatment of severely malnourished children
- Prevention of micro-deficiencies
- Treatment of diseased infants
- Vaccinations of children and pregnant women
- Rehabilitation of maternity services
- Purification of potable water

- Improvement of the situation of children in nurseries, kindergartens, orphanages, and boarding schools
- Provision of school materials

After a series of one-year programmes, UNICEF started its first three-year programme cycle in DPRK in 2001 (2001-2003). Currently, it is in its penultimate year of its second three-year Country Programme cycle of 2004-2006. This programme cycle is characterised by efforts to seize all opportunities for a "preparation for development".

UNICEF collaborates with the government, particularly the Ministry of Public Health and the Ministry of City Management, to educate and familiarize its counterparts about new approaches to social services. UNICEF also works directly with the Ministry of Foreign Affairs, Ministry of Education, Central Bureau of Statistics, Institute of Child Nutrition, State Planning Commission, Grand People's Study House, and the Korean Democratic Women's Union.

The current three-year country programme cycle continues to lay major emphasis in the health and nutrition sector. UNICEF has been steady and persistent with its inputs in this sector, especially with simple, life-saving and increasingly child development and growth related inputs. UNICEF is by far the largest contributor to the National Immunisation Programme in the country along with essential medicines and therapeutic food for treating severe malnutrition. It has had a long-standing collaboration with the WFP in providing vitamins and minerals for fortifying food supplied by WFP that goes to young children in specialized institutions, as well as pregnant and lactating mothers. UNICEF also addresses micro-nutrient deficiency among women and children through projects such as distribution of Vitamin A and de-worming medicine and assisting the Government in ensuring adequate and universal iodization of salt for human consumption. More recently, UNICEF has introduced targeted distribution of multi-micronutrients, folic acid and iron for all women of child-bearing age. It has also started emphasizing the importance of better child-feeding and caring practices as an essential part of an Integrated Early Childhood Care and Development (IECD) package and UNICEF intends to keep working with the Government to bring this concept as close to the community level as possible. A similar approach which can contribute substantially to care for child-health and nutrition through community and family involvement and eventually find effective roles for these entities is the Integrated Management of Childhood Illnesses. In future, efforts should be intensified to forge a much closer relationship between the IECD and IMCI approaches. UNICEF collaboration in the Water and Environmental Sanitation sector also contributes to the reduction of nutritional set-backs that can be often caused by recurring episodes of diarrhoeal diseases. These interventions are far from being extensive enough and are yet to produce demonstrable impact by as stand-alone projects, especially in any significant scale, but we believe that the synergy of all these various interventions along with the basic food supply by donor agencies, and the country's own growing coping ability are



all making valuable contributions to child survival and the overall improvement of health and nutrition of children and women. As the report of the Nutrition Assessment of 2004 shows, there is a definite, discernable trend in improvement in child nutrition, especially among younger children, who are the most vulnerable. Since catch up growth for older children who are already stunted is slow and difficult to achieve, the focus is well invested in younger children. This is evident from the current findings. Unfortunately there is still no improvement noticed in maternal nutrition, and if this is allowed to continue unabated, it will, in turn, fail to give the child a good start in life, nutrition-wise.

### **Nutrition intervention at the community/family level: using Facts for Life (FFL)**

**Background:** In the DPRK, State's role is still vital in the upbringing of children. The bulk of this responsibility is traditionally left to child-care institutions such as nurseries and baby-homes and not to families. Almost all young children spend significant amount of their time at nurseries (day care centers) under the care of trained caregivers. However, in the present socio-economic situation, the role and involvement of families, especially mothers, in the care and upbringing of children is gradually increasing. Consequently, it is important to raise awareness and improve skills and knowledge of families on issues related to child care including feeding practices, home management of common childhood illnesses as well as maternal health and nutrition which can seriously impact upon the survival, growth and development of children.

In 1989, UNICEF, WHO and UNESCO collaborated in publishing a collection of basic life-saving messages targeted globally at parents/primary care-givers of children, primary health-care providers, and media personnel. This compilation of well-researched messages, called Facts for Life (FFL), came with instructions on how to use it effectively, encouraging innovative and creative approaches and challenging mass media and interpersonal channels alike to promote the messages for behavioural change at the family/ individual level. Encouraged by results achieved all over the world in empowering families with essential information and knowledge for improved child-care practices, in 2002 UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP and the World Bank jointly published the third edition of the book. Facts for Life is now firmly established as the best source of scientifically correct and well-researched source of life-saving messages for health workers and parents around the world.

The messages contained in Facts for Life are based on the latest scientific findings and are presented in non-technical language so they can be easily understood by people.

An agreement was reached between the Government and UNICEF for the adoption of Facts for Life in DPRK and promoting messages contained therein. It was felt that with universal literacy rates, the relevance and usefulness of the messages especially with an increasing role of mothers and other care-givers of small children at the family level, and a general dearth of reading materials at the family level, such a publication would be an effective and welcome intervention. Frontline health service providers would also find the

publication a useful tool.

With this understanding, the concept of FFL was adapted to the situation in DPRK, and a Korean equivalent called "Family Book" was developed in 2003–2004. The Korean version includes more detailed, and often technical, information in support of the basic messages which might be more relevant and useful for health personnel in contact with families and mothers such as family doctors and nursing staff. The objectives of the project was to disseminate key messages of the book to families/communities through different channels in order to raise awareness and improve knowledge and skills on issues related to child survival, growth and development, and to ultimately bring positive changes in behavior and practices at the family level.

### **Family Book dissemination Strategy:**

Two separate strategies, one for focused counties, and another for nationwide, are applied.

The strategy was to form an effective social alliance with relevant partners to help disseminate the messages to a range of various levels of stakeholders and actors, such as health policy level officials and programme managers' such as line Ministry personnel, technical experts such as doctors, family doctors and nursing staff, institutional level staff including care-givers at nurseries and baby homes, and of course primary care-givers at the family level such as parents, with an emphasis on mothers.

This would be done through a media-mix approach such as print and electronic media including web-sites and public lecture series, television and radio spots and programmes, print media, training/orientation and discussion forums as well as inter-personnel communication when possible.

The nationwide dissemination strategy is primarily aimed at raising awareness among key actors (implementing agencies) such as ministries at central level, doctors of provincial hospitals and provincial people's committees through the distribution of the book and also integrating a topic on this in on-going training/orientations/meetings. A major partner with the Ministry of Public Health in this respect is the Grand People's Study House (GPSH), through internet, public lecturers and libraries at national and sub-national levels. In 2004, consultative meetings were held with the Korean Democratic Women's Union (GPSH) and the Ministry of Public Health (MoPH). The KDWU developed a proposal to disseminate the key messages through training, and exhibitions. The GPSH developed a proposal to disseminate the messages through website and public lectures. Public media such as radio, TV and printed media have yet to develop dedicated programmes to support this project and still need to work on this.

Some progress is reported in the national dissemination strategy, although there still seems to be a need for more consistent and intensive planning and regular implementation by all partners. The approach including the current material and their effectiveness remains to be evaluated, and further improvements made, as required.

In 2004, the National Coordination Committee (NCC) and UNICEF jointly organized

launching of the book, first event of its kind in DPRK. Senior policy makers of the government, senior managers from different agencies (MoPH, MOE, MoCM, KDWU, GPSH), donor communities/embassies, and UN agencies attended the event.

As a primary support vehicle to the Family Book dissemination strategy, a total of 339,065 copies of the book have been printed since 2004, and distributed to:

- All families with young children, and pregnant women, in three focused counties (Kosan, Kowon and Jyongpyang);
- All care institutions (nurseries, county hospitals, ri clinics) in six focus counties
- Selected families with young children and pregnant women (poor living condition) in other provinces;
- Training institutes (care colleges) in all provinces;
- Selected health institutions (pediatric, maternity and general hospitals) in all provinces;
- Ministries at the central level (a few copies).

Apart from the general nationwide dissemination strategy, the project also adopted a policy of intensive message dissemination and promotion through the concerted efforts of partner institutions through inter-personal contacts and communication techniques as the main approach in some selected geographical locations. These are the 10 UNICEF assisted "Focus Counties" where there is a special effort for developing replicable modules of integrated social services for children and women in the current UNICEF Country Programme Cycle. The objective was to ensure effective adoption of better child-care practices at the family level in the shortest possible time and to learn from the experience for wider application with adaptation/modification of the strategy as merited.

The KDWU, the main partner in this focused approach, is involved in the dissemination of the messages to mothers in six focus counties at the moment. Interpersonal communication mechanism through regular, monthly contact with women is the key strategy of the KDWU. These monthly contacts are through a combination of their normal monthly meetings with women and specially organized discussion sessions for this. Based on this year's experience, KDWU's involvement will be extended at wider scale next year (2006), ultimately expanding to national coverage. Other partners may also be brought on board, as appropriate, and as and when they are ready.

UNICEF believes that along with traditional interventions in the area of nutrition for children and women through care institutions and rehabilitation centres, efforts should also be focused on empowering families and mothers to provide an effective first line of defense against malnutrition among children in particular, and that along with other practical interventions, knowledge and skills will play a major role in this. Some of the major activities have been undertaken in that direction so far:

In 2004, KDWU trained 300 lecturers, who then trained 2,700 provincial/county unit

members. The provincial/counties unit members trained last year will continue to share the messages with other women in their respective geographical areas through inter-personal communication. In 2005, KDWU has trained more members. These trained members will reach all women in their respective counties, and the key messages will be shared with them through interpersonal communication channel.

Key messages have been displayed on special occasions such as Women's Day, and Children's Day, - and more are planned for 2005. KDWU has a strong network to reach majority of mothers nationwide, and a keen interest to work with the MoPH and UNICEF on this project.

The GPSH has set up a website which is accessible through local internet to public in all nine provinces. The website includes 10 different topics. Public lectures are held regularly in Pyongyang, and there are plans to intensify this further in future.

### **GPSH also has a network to reach public audience at provincial level.**

MoPH has the capacity to identify target audiences (e.g. families with young children), and is capable to distribute, follow up as well as keep distribution records. Most of all, they, along with NCC, believe in this approach and are very keen to see this taken to scale.

A good start has been made, and there seems to be a growing demand for the publication. However, the project still has to go a long way before any claim to a desirable effect can be made. The Government and UNICEF will jointly review progress as we go along. A feedback on the book is expected at the end of 2005. There will also be a review of the overall strategy to see what needs to be modified and strengthened and how. More copies of a modified version of the publication and supplementary and complementary materials and more emphasis on mass media for creating an overall atmosphere facilitating behavioural change at the family and community level may be necessary, but details need to be carefully reviewed and developed. A cross sectoral review involving all major partners and stakeholders is planned for the end of 2005. Under the given conditions in DPRK, this is still the closest to community and family level interventions UNICEF has been able to move towards, in the area of child nutrition.