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ANALYSIS AND EVALUATION OF WONSEONG COUNTY MODEL NUTRITION EDUCATION PROJECT

September 7, 1980

ANALYSIS AND EVALUATION COMMITTEE
OF WONSEONG
COUNTY MODEL NUTRITION EDUCATION PROJECT

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Analysis and Evaluation Committee of
Wonseong County Model Nutrition Education Project

"Analysis and Evaluation of Wonseong County Model Nutrition Education Project" is published here as part of the report and made possible by the request on the evaluation for Wonseong County Model Nutrition Education Project (1978-1980) which was financed by US Agency for International Development and conducted by Meals for Million Foundation/Korea (Project Director, Jung Kun Seo) in Wonseong County area, Kangwon Province, Korea with the supports of County government.

PREFACE

The improved dietary life of Korean people prompted by the national economic development has been one of the main factors for the better health, higher living standard, social welfare and national prosperity. The improvement in the dietary life balanced intake of nutrition has been further promoted by the well-planned and systematic nutrition education.

Considering the fact that the nutrition status of the people in rural communities in Korea is considerably inadequate, the "Wonseong County Model Nutrition Education Project" conducted by Meals for Millions (MFM) Foundation/Korea in Wonseong County, Kangwon province is a timely and important project. The Education Project had been successfully carried out for three years (1978-1980) and the results have been evaluated and analyzed by the special committee. It is believed that the outcome of the evaluation and analysis of the Wonseong County Model Nutrition Education Project will provide very useful data and informations not only for the understanding of the project itself but also for the successful accomplishment of future project in this field. The informations will also be of great help for the Government officials and other people concerned to strengthen their understanding of the importance of the nutrition education.

We sincerely appreciate many Institutions and Participants involved in the Evaluation and Analysis of this project for their full cooperation and sympathetic support. Their close cooperation from the planning stage to the final analysis has



contributed greatly not only to the development and expansion of the nutrition education project but also to the improvement of national nutrition status.

The following are the Institutions and Individuals who have provided close cooperation and support in the preparation of this research work on the "Analysis and Evaluation of Wonseong County Model Nutrition Education Project".

Institutions :

USAID/K, MFM Foundation/Korea, Office of Wonseong County, Office of Kangwon Province, Rural Nutrition Institute/ORD, Medical College of Korea University, ASI Marketing Research/Korea Branch, UNICEF/Korea, and Korea Institute of Science and Technology (KIST).

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There are many other institutions and cooperators.



I wish, on behalf of, the Analysis and Evaluation Committee,
to thank them again for their close cooperation and helpful
assistance.

September 7, 1980

Hong-Sik Cheigh, Ph.D.
Chairman
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Committee of Wonseong County
Model Nutrition Education
Project

111

CONTENTS

Summary & Recommendation	1
I. Introduction of Analysis and Evaluation of Wonseong County Model Nutrition Education Project	11
1. Background and Importance of Analysis and Evaluation	11
2. Objective of Analysis and Evaluation	15
3. Scope of Analysis and Evaluation	16
II. Methodology of Analysis and Evaluation	17
1. Data Collection and Examination of Model Nutrition Education Activity	17
1) Collection of General Situation in Wonseong County	17
2) Riview of Wonseong County Nutrition Education Project and Its Activity	17
2. Selection of Baseline	18
1) Baseline data of Project in the Starting Year (1976-1978)	18
2) Baseline data of Adjoining Control Area (Hyeongseong County)	19
3. Survey of Target Group and Sampling Method ...	20
1) Interview Area and Target	20
2) Area and Person for 24-hr Recall Survey ...	22
3) Area and Person for Nutrition and Health Survey	22
4) Sampling Method	22

iv

4.	Analysis and Evaluation Method	23
1)	Time Schedule of Analysis and Evaluation ...	23
2)	Organization of Team for Analysis and Evaluation	23
3)	Field Survey Operation Method	24
4)	Biochemical Test and Parasites Examination	26
5)	Observation of Concerned Official's Opion	26
6)	Data Analysis	26
III.	General Situation in Wonseong County	27
1.	General Introduction	27
2.	Education, Health and Hygiene Situation	28
1)	Education	28
2)	Health and Hygiene	28
3.	Food Intake and Nutrition Situation	29
1)	Food Product Situation	29
2)	Food Intake Status	29
3)	Nutrition Status	30
4.	Existing Nutrition-Related Project in Wonseong County	31
1)	Farm Operation for Nutrition Project	31
2)	Operation of High-Nutrition Food Production Plant	31
3)	Program for Rural Development and Health Improvement	32
IV.	Summary and Activity of Wonseong County Model Nutrition Education Project	33
1.	The Goal of Project	33



2.	Scale of Project	33
3.	Activity Contents of Project	35
	1) Nutrition Education Training	35
	2) Development of Nutrition Educational Aids and Materials and Radio Program	35
	3) Others	36
	4) Monitoring and Self-Evaluation	37
V.	Characteristics of Families and Persons Contacted for the Analysis and Evaluation	38
1.	Characteristics of Interviewees	38
	1) Housewives and Civil Defence Forces	38
	2) Primary School Students	43
	3) Social Workers	43
2.	Characteristics of Families and Persons for 24-hr Recall Survey	44
3.	Characteristics of Families and Persons for Anthropometry and Clinical Examination	44
VI.	Evaluations of Nutrition Education Activities and Educational Aids and Materials	48
1.	System and Organization of Education Activities	48
	1) System of Education Program	48
	2) Organization and roles of MFM/K Education Staffs	50
	3) Participation and Role of Local Social Workers	50
	4) Organization and Application of Nutrition Improvement Club	54
2.	Suitability of the Education Approach and Contents	55

21

1)	Selection of the Village People for Education	55
2)	Time and Place of Education and Participation/Contact Eagerness of People	56
3)	Method of Education and Training	58
4)	Contents of Education and Training	61
3.	Review of the Educational Aids and Materials	66
1)	Developing Process of the Educational Aids and Materials	66
2)	Contents of the Educational Aids and Materials	67
3)	Understanding and Interest on Educational Aids and Materials	67
4)	Utilization and Application of Educational Aids and Materials	71
VII.	Evaluation-Analysis on the Change in Knowledge and Attitudes toward Nutrition and Health	72
1.	Housewives and Civil Defence Forces Members ..	72
1)	High-Nutritive Staple Food	72
2)	Proper Washing Method of Rice	75
3)	Weaning	75
4)	Protein-rich Food	76
5)	Nutritive Elements Helpful for Anemia	78
6)	Primary Factors Selecting Snack Foods for Children	78
7)	Vulnerable Group Among Family Member toward Nutrition and Health	80
8)	Discussion on Nutrition with Family Member	80

VII

2.	Primary School Students	81
1)	High-Nutritive Staple Food	81
2)	Protein-rich Food	82
3)	Most Abundant Nutrient in Dark Green leaves	82
4)	Primary Factors Selecting Snack Foods for Children and Meal-Taking Attitude	83
5)	Accuracy of Nutrition Informations	84
VIII.	Analysis-Evaluation on the Change in Dietary Life and Behavior toward Nutrition and Health	85
1.	Intake of Protein Foods (Soybean Foods)	85
2.	Food Preparation and Storage	86
3.	Snacks for Children	86
4.	Manu Change for Balanced Diet	89
5.	Sanitary Precaution in Dietary Life	90
6.	Production of Nutritive Foods	91
IX.	Analysis-Evaluation on the Change in Nutrition Status	92
1.	Kinds of Dietary Foods	92
2.	Food Consumption	93
1)	Average Food Intake Per Person	93
2)	Average Food Intake by Preschool Children and Pregnant/Lactating Women	95
3.	Nutrient Intake	96
1)	Average Nutrient Intake Per Person	96
2)	Average Nutrient Intake by the Preschool Children and Pregnant/Lactating Women	98

VIII

X.	Ananalysis-Evaluation on the Change in Anthropometry and Clincial Status	102
1.	Anthropometry of Preschool Children (1-3 years old)	102
2.	Anemia and Clinical Signs	103
1)	Frequency of Anemia	103
2)	Clinical Signs	104
3.	Intestinal Parasites Infection Among Children	106
XI.	Overall Discussion and Conclusion	107
1.	Methodology and Approach for Analysis and Evaluation	107
2.	Significance and Education Activities of Wonseong County Model Nutrition Education Project	109
3.	Change in Knowledge, Attitude and Dietary Life/Behavior	114
4.	Improvement of Nutrition and Health Status	121
5.	Public Opinion on Wonseong County Model Nutrition Education Project	125
XII.	References	127
	Appendix (1-44)	131

ix

SUMMARY AND RECOMMENDATION

The Meals for Millions Foundation/Korea has carried out "Wonseong County Model Nutrition Education Project financed by USAID during 1978-1980" to help improve the nutrition and health status of the rural people and to raise the awareness of the government about the importance of nutrition by giving an intensive nutrition education to the people, students and local government officials.

The Analysis and Evaluation of Wonseong County Model Nutrition Education Project is designed to review 1) the educational activities, 2) change in knowledge and attitude related to nutrition, 3) change in behavior in dietary life, 4) change in nutrition status and 5) improvement in health status of the people.

The analysis and evaluation, which was carried out from May through September 1980, is expected to serve not only for the overall review of the Project but also as an important data in the formulation of policy program and educational program for nutrition. The summary of the analysis and evaluation, and the recommendation are as follows.

1. SUMMARY

1) Method of Analysis and Evaluation

Direct analysis and evaluation of project was carried out by a combination of the approach of KABINS(knowledge, attitudes, behavior, improvement in nutrition status) Model and the analysis of baseline data - the status before and

after nutrition education (NE) project was conducted, and the status of NE County (Wonseong) and Control (Hyeongseong) County.

To collect data, the questionnaire covered 200 households, 50 primary school students, 132 members of Civil Defense Forces, and 36 local social workers in Wonseong County, and 50 households and 50 primary school students in Hyeongseong County. A random sampling method was also used to collect data of the status of intake of foods nutrition and the health status from 159 households in Wonseong County and 30 households in Control County.

2) General Status of Wonseong County

Wonseong County, Kangwon Province, has a total of 752.22 sq. km of land and a population totaling 68,125 in 125 Ri of 9 Myons.

Of the total population, 71.8% are engaged in farming, and 16% have religions. Almost every household has a radio set or television set. Water supply system has been developed for 31.8% of the total population. There are 45 primary school and 13 middle and high schools, and 13 medical and health facilities. The county yields 23,647 tons of rice and 2,670 tons of barley annually, but the production meets only 70-80% of the total grain demand in the County.

In 1976, the average intake of calories, protein, calcium, iron, vitamin B2 by the people in the County was less than the recommended dietary allowance.

3) Evaluation of Nutrition Education Activities

The Wonseong County Model Nutrition Education Project was carried out by 1 staff worker from the education planning

division of the Meals for Millions Foundation/Korea and 2 local educational staff, and also NE program was supported by 90 social workers and some civil servants related to nutrition program of local government.

The educational activities included 1) direct education training for housewives and members of Civil Defense Forces, 2) education for social and health workers, teacher, and civil servants in charge of rural development, 3) development of educational aids and forwarding of them and 4) development of model primary schools for nutrition improvement and others.

This NE program as the non-government educational activities have stimulated the local civil servants to participate actively in this nutrition project. The education of the social workers and the organization of Nutrition Improvement Clubs among the people were one of the remarkable activities of the Project.

Most (97%) social workers pointed out the importance of the nutrition education, and 81% of them said that they are doing "worthy" educational services for the people. There was some problems in the selection of the time of education and the target people of education during farming season as 33% of the social workers had point out. However, the education of housewives, primary school students, local community leaders and members of Civil Defense Forces and Homeland Reserve Force has an encouraging response from them.

The social workers said that it was desirable to have practical training (48%) and free discussion (39%) for the educational program. The content of the education seemed easy for 74-78% of the people.

It was remarkable that about 20 kinds of booklets, pamphlets and poster were developed and published for the

educational program during the Project period. Most (79-91%) of the people expressed their desire to receive continuously such educational aids and materials. And 42-73% of the people commented that the booklets have a fresh and interesting information. Although there was much room for development in the educational aids, it was one of the important accomplishments that the educational aids had been developed during the Project period.

In general, the educational activities were successful in the field of the intensive education of social workers, leaders of Nutrition Improvement Clubs, members of Civil Defense Forces and Homeland Reserve Force, seminars and exhibitions, and the radio programs for nutrition education. On the Project performance, 82.7% of the social workers said that "The Educational Program was very/considerably successful".

4) Improvement in Knowledge and Attitude toward Nutrition

Of the 8 items of the questionnaire for the survey of knowledge and attitude, the housewives in Wonseong County (NE County) had more correct ideas of the 5 items such as the weaning period, high-protein foods, nutritive elements good for curing anemia, deciding factors for selection of snack, and vulnerable group among family members than their counterparts in Control County. The primary school students in NE County also had more correct ideas of the high-protein foods, deciding factors for the selection of snacks, and balanced foods than their counterparts in Control County.

It is interesting and noteworthy that 64% of the members of Civil Defense Forces said that they had discussed with their family members on nutrition improvement after they received the nutrition education.

Although the people in NE County had more correct ideas of nutrition than the people in Control County, the level of knowledge was still low in NE County itself.

5) Improvement in Behavior of Dietary Life

The people in NE County had been more positive in the intake of protein and preparation and storage of foods than the people in Control County. Housewives in NE County provided more nutritive "Wooryang-A" and "Milk" as supplementary food for their children than their counterparts in Control County.

On the results of the nutrition education, the members of Civil Defense Forces said that there was an increase in green vegetable dishes (18%), composited cereal foods (13%), protein foods (10%), nutritive foods (11%), and diversified menu (8%) in their regular meals at home. Primary school students in NE County had more nutritive side dishes made up of protein and minerals for their lunch box than their counterparts in Control County.

However, there was no considerable difference between NE County and Control County in the behavior of washing hands before meals and boiling water to drink.

After receiving the nutrition education, the people in NE County increased the production by 1.5-5.9% of protein-rich foodstuffs, by 1.5-7.5% of dark green leaves, and by 2.0-10.4% of oil stuff.

It is also encouraging and noteworthy that 51-85% of the housewives and members of Civil Defense Forces in NE County said that "The nutrition education was useful and helpful in their dietary life", and that 93% of the housewives and 79% of the CDF members expressed their desire "to attend at the

nutrition education program" if such program is provided for them.

6) Improvement in Status of Nutrition and Health

The number of foods which the people in NE County ate before the education program was only 101 in 1976, but the kinds of foods was increased to 128 in 1978 to 160 in 1980. The per capita daily average intake of foods was also increased from 894g in 1978 to 970g in 1980. Associated with the general increase in total intake of foods, there was remarkable improvement in the intake of daily products, vegetables and fruits by preschool children and pregnant and lactating women, resulting in an increased intake of calories, protein including animal protein, fat, calcium, vitamin A, B1 and B2. The above improvement is considered as the result of the Model Nutrition Education Project in addition to the general increase in the people's purchasing power of food-stuffs, development of primary health services and social conditions.

There was no considerable difference in the clinical symptoms of children suffering from nasolabial seborrhea, Gum swollen/cheilosis, and dental caries in both NE and Control Countries. The percentage of children infected with roundworms was drastically decreased in 1980 from 1978. Roundworms were only the parasite which infected by children.

However, it is considered that a considerable time will be necessary before the improved knowledge, attitudes, behavior and increased intake of foods bear fruits in the improvement in the physical status and health of the people.

7) General Opinion of the Wonseong County Model Nutrition Education Project

Most of the local community leaders and the people in NE County said that the Project was important and necessary to improve the nutrition status of the people. They expressed their desire that the Project is expected to be continued and extended for the time being.

2. RECOMMENDATION

The Wonseong County Model Nutrition Education Project has contributed greatly not only to the remarkable improvement of knowledge and attitude toward nutrition on the part of the people in Wonseong County but also the strengthened cooperation by the local government offices as well as the central government for the successful implementation of the project.

It will be difficult to achieve an overall improvement in nutrition status of the people during the three-year period of the Model Nutrition Education Project. However, the Project has brought about an important data for the formulation and implementation of nationwide nutrition policy and nutrition education program, and has paved the way for the development of similar nutrition education projects in other rural areas.

Based on the results of the analysis and evaluation of the Model Nutrition Education Project, this Committee recommends the following points to MFM Headquater/Korea and Korean Government.

1) It is too short to implement the Education Project ranging from planning to education, to evaluation, to reeducation and to analysis and evaluation during the 3-year period. To improve the current nutrition status and dietary life of the people, it is necessary to continue a nationwide nutrition education on a long-term basis. The Project, which was carried out in Wonseong County, has served as a model and trial case for the nutrition educational development.

To consummate the Project, it is desirable to extend the Project by 2 more years for a total five year project period. The activities and functions of the additional Project should be continuously carried out as first three years project. The Project is expected to carry out the additional functions as follows :

a. Study the possibility of utilizing efficiently the local administrative and technical service, and of strengthening of cooperation with local civil servants for the nutrition education program.

b. Develop further the nutrition educational aids and materials.

c. Strengthened implementation of the education program.

d. Re-evaluation of the results of the nutrition education.

2) It will be desirable to have additional nutrition education with the extention of the project period as mentioned above, however, it would be impossible in future, we would like to recommend to continue the Project (2 more years for a total five years) by Wonseong County governments

in existing Wonseong County Model Nutrition Project Center.

In this case we consider that, the staff in MFM/Korea should be assisted to additional Model Nutrition Education Project in every aspects for additional 2 years and this would be carried out with the maximum utilization of local social workers and local administratives.

3) The pattern of the Wonseong County Model Nutrition Education Project will be used as a model/demonstration case for the improvement of nutrition status of the public, in the central part of this country. However, the Wonseong County Model Nutrition Education Project could be hardly as a demonstration for the southern part of the county. Therefore, another 2nd Model Nutrition Education Project is expected to be developed in rural communities in the southeren part of the country. The 2nd Model Project will include the following activities.

- a. Intensive nutrition education (3 years).
- b. Production and supply of nutritive foods (including the development of a small-scale processing plant of nutritive foods) (5 years).

4) Strengthening and reorientation of nutrition education activities are expected by utilizing the existing administrative and education systems in the country as follows :

- a. Systematic nutrition education for students at primary schools
- b. Maximum utilization of health workers in Myon and County for the promotion of the nutrition education in addition to their services for mother-child health care,

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family planning and others.

c. Nationwide nutrition education through mass media.

d. Nutrition education incorporated with the Saemaul
Undong (New Community Movement)

I. INTRODUCTION OF ANALYSIS AND EVALUATION OF WONSEONG COUNTY MODEL NUTRITION EDUCATION PROJECT

1. BACKGROUND AND IMPORTANCE OF ANALYSIS AND EVALUATION

A balanced nutrition is an indispensable factor in the supply of necessary manpower resources for the industrialization efforts of the nation as well as in the improvement of public health and physique of individual persons. Besides, the nutrition status of a nation has a direct bearing on infant mortality, average life span, health and physique, work efficiency and creative resources of the nation. It is also considered an important barometer of the social order and economic growth as a whole. (1)

Nowdays, it is to be admitted that the nutrition status of Korean people has been improved considerably. Based on the statistical figures on the food and nutrition supply for the past decade, the daily supply of calory per capita increased by about 30.3% from 1,943 Kcal (1962) to 2,533 Kcal (1978), while protein supply increased by about 38.7% and the rate of animal protein increased from 3.7g (1963) to 18.6g (1978). (2) However, under the existing dietary patterns that heavily rely on vegetable sources for the supply, chronic insufficient nutrition still poses a greater problem in rural communities and some urban outskirts. Furthermore, the intake of protein being practically limited, the actual daily intake of animal protein per capita resulting from nutrition survey is much low, only 13.1g, and accordingly the necessity of improving

food consumption patterns in quality must be emphasized.

Especially, it is to be noted that the wide gap in dietary pattern between urban and rural areas still exists. (3,31,34)

The imbalance and malnutrition are generally caused by inadequate and deficient food supply, traditional food consumption habit, low purchasing power and ignorance of nutrition knowledge and the solving of one factor only can not be expected to contribute to solve the entire nutrition problem.

In order to solve the problems concerning the food supply, intake and nutrition, the improvement of food supply system, namely production-storage-processing-transportation system, and increased purchasing power along with increased income will be necessary. We considered the problems encountered from food consumption habit and ignorance could be solved successfully by intensive nutrition education.

Nutrition Education and National Nutrition Programs have been undertaken in Korea since 1968. Applied nutrition program operated by the Office of Rural Development of Ministry of Agriculture and Fishery, school feeding program and basic nutrition education centered on textbook for the primary school children by Ministry of Education, national nutrition survey and guidance by Ministry of Health and Social Affairs, operations by WHO, FAO, CARE and UNICEF/Korea have marked considerable nutrition/education activities in Korea. Also many other institutes and other governmental organizations have participated in nutrition education and improvement of national nutrition situation. Among these activities, Applied Nutrition Program and school feeding program are considered as most significant fruits in spite of many difficulties. (4,27) However it must be regreted that

these are few achievements in the field of carrying out nutrition education based on fundamental considerations. Those considerations are 1) monitoring and defining of actual situation and nutrition problems of target area, 2) planning, 3) systematic nutrition education, 4) integrated approach for the improved nutrition in dietary life, and 5) evaluation.

Meanwhile Wonseong County of Kangwon Province, with the assistance of St. Peter's Rural Development Association and Catholic Relief Service embarked on a nutrition project for the children covering four villages in 1971 and extended the scope of the project to 75 villages in 1972. For the purpose of propelling this nutrition project as a long-term program, a advisory committee was formed in 1972. Under the continued auspices of the Catholic Relief Service, national and Kangwon Province governments, a vast river site area of over 62.7ha within Wonseong County area was transformed into arable farm land and outcomes from this farm used as a nutrition project. (1,5) In addition, a food processing plant (production capacity: one ton/10 hrs) was established for the production of high-nutrition low-cost foods (HNIC) with the support of the Office of Wonseong County, Meals for Millions Foundation and Korea Institute of Sci. & Technol. (KIST). And also ASI Market Res. Inc./Korea has carried out marketing research for the development and production of HNIC as well as food habit, and Korea Univ. conducted an overall nutrition survey on the target groups in Wonseong County. (1,7,8)

Thus, this nutrition education has been emphasized on nation-wide scale and continuous eagerness and efforts of all sectors in Wonseong County served to ripen those demands

that systematic and intensive nutrition education be conducted as field demonstration model. On the other hand, since 1972, Meals for Millions Foundation/K has been studying to produce and develop HNLC by applying those materials available in local areas and with above mentioned results, it planned to conduct overall nutrition education in this local community.

Wonseong County Model Nutrition Education Project (1978-1980) funded by USAID is conducted by MFM/Korea with the support of local concerned institutes to the residents (housewives, Homeland Reserve Forces, Civil Defense Forces), social workers (Saemaul Undong leaders, primary school teacher, Health Center workers, nutrition improvement club leaders) and primary school students at the county level.

Such Nutrition Education Project, in the course of education operation and by means of self-evaluation, is expected to enlarge the efficiency of education by monitoring and evaluation system. In general, project evaluations are conducted and can serve as an educational tool to the target population and as a feedback system to the project's manager. However, judging from the objective, significance, scale and special function of Wonseong County Model Nutrition Education Project, MFM and Advisory Committee of project realized the importance of analysis and evaluation, and was decided the organization plan of evaluation committee in May of 1980. And also it was requested that analysis and evaluation of this project should be conducted intensively on the following items.

- i) Analysis of general NE activities

- ii) Evaluation of NE effect on the knowledges and attitudes of those who received education
- iii) Evaluation of NE effect on the behavior changes and dietary life improvement
- iv) Evaluation of NE effect on nutrition status and actual health improvement

Those obtained data will become important reference materials not only for the self-evaluation of this project but also for those concerned persons engaged in nutritional programs. Furthermore it will provide good opportunity for policy-makers of government and other concerned institutes to realize the importance of nutrition education.

2. OBJECTIVE OF ANALYSIS AND EVALUATION

This analysis evaluation of the Wonseong County Model Nutrition Education Project has two major objectives.

1) First Objective

To analyze and evaluate effectiveness and rationality of the nutrition education program which conducted for the population in Wonseong County and any improvement or effectiveness in nutrition knowledge, attitudes, behavior, intake of nutritive foods and health status.

2) Second Objective

To prepare the data on the analysis and evaluation of the Wonseong County Model Nutrition Education Project for use by the government policy-makers and professional nutrition

personnel and field workers and in their endeavor to help improve the nations nutrition status.

3. SCOPE OF ANALYSIS AND EVALUATION

The scope of analysis and evaluation of Wonseong County Model Nutrition Education Project is as follows :

- 1) Survey of present status of Wonseong County
- 2) Survey and review of project activities
- 3) Analysis and evaluation of nutrition education methodology
- 4) Evaluation of educational aids and materials
- 5) Evaluation and analysis of improvement in nutrition knowledge and attitudes
- 6) Evaluation and analysis of the change in behavior and improvement in dietary life
- 7) Evaluation and analysis of change in the consumption of foods and nutritions before and after the nutrition education
- 8) Analysis of the change in health status before and after the nutrition education
- 9) Recommendation based on the from conclusion of this analysis and evaluation

II. METHODOLOGY OF ANALYSIS AND EVALUATION

1. DATA COLLECTION AND EXAMINATION OF MODEL NUTRITION EDUCATION ACTIVITY

1) Collection of General Situation in Wonseong County

Present situations represented by population, area, climate, culture, education, health, hygiene of Wonseong County, where nutrition education project was conducted concentratedly at the county level was surveyed and arranged by using 1979 Wonseong County Annual Report.⁽¹⁰⁾ The present situation and nutrition status were informed by Report on Nutrition Survey (1976) for the nutrition project of Wonseong County.⁽⁷⁾ Also general informations on the existing nutrition project connected to Wonseong County were drawn up by interview with local Government Officials, related report of KIST⁽¹⁾ and MFM/Korea.⁽⁵⁾

2) Review of Wonseong County Nutrition Education Project and Its Activity

The goal, size, contents of training activity and self-evaluation of project were referred by related documents,^(5,6) interviews with the persons in charge of nutrition training of MFM/K and by field survey.

2. SELECTION OF BASE LINE

The Followings were used as Baseline data for analysis and evaluation of this education project : i) all kinds of reports on the nutritional evaluation (1976-1978) in Wonseong County and (ii) results from comparing the data for the analysis and evaluation of Wonseong County project with those of Chonryong Ri, Mooke Ri and Kokyo Ri in Hyengseong (Control) County adjoining to Wonseong area.

- 1) Baseline data of project in the starting year
(1976-1978)

- a. Report on Nutrition Survey for Wonseong County Project

Before Model Nutrition Education Project was put into operation, the team of Biochemistry Lab., Medical College, Korea University gave a report of a baseline survey of the county in 1976 with this year as its starting point and the contents of nutrition status of local population, anthropometric and clinical status in the report were used as baseline data. (7, 35)

- b. Reports on Pilot Product Test

ASI Marketing Research Inc./Korea Branch conducted pilot product test on 100 housewives with preschool children for the purpose of obtaining necessary data for the modification of high-nutrition low-cost foods in 1977 and some of those data were served as baseline data. (8)

c. Base Line Survey Report for Wonseong County Model
Nutrition Education Project

MFM/Korea executed a baseline survey report for Wonseong County Model Nutrition Education Project in 1978 with a view of grasping present situation of Wonseong County Population covering 2,412 residents of 444 households and those contents such as general status of population, education, cultural facilities, food patterns and nutrition information of preschool children, pregnant and lactating women were used as reference baseline data. (9)

2) Baseline data of Adjoining Control area (Hyeongseong County)

Mooke Ri, Chongryong Ri, Kokyo Ri in Hyeongseong County, Kangwon Province, Adjoining areas to Wonseong County were selected as control areas.

Those materials derived from the comparison above mentioned areas with Wonseong County were used as baseline data. The special quality of these data will be explained in every survey method items, analysis and evaluation outlook.

Hyeongseong County covers a total area of 1,031,231 km² including farm land of 16,144 km², and 83,484 residents of 14,382 families live in this county. Hyeongseong County also comprises 8 Myons including 112 Ris. 11,072 families are farmhouse, 74.6% of entire households, and there are 56 primary schools (4 branch school included). 15,157 radios and 5,927 television sets are available throughout Hyeongseong County. Also, 18 medical facilities such as 1 health center, 4 branch health centers, hospitals are worked. 19,343 residents of 3,427 households, 23.1% of total population,

benefit by waterworks facilities. (11)

Hyeongseong County Produces rice of 22,572 tons, barley of 2,526 tons, miscellaneous cereals of 8,561 tons, soybean of 4,282 tons, respectively. 12,355 Korean breeding cows and 2,488 pigs are also bred. As for foods intake situation, the total daily dietary intake per capita amounts to 958g and animal foods total intake amount to 38g. These figures show their vegetable oriented food consumption pattern. Nutrient intake per capita indicates 1,857 kcal and 55.6g of protein. (7)

3. SURVEY OF TARGET GROUP AND SAMPLING METHOD

1) Interview Survey Area and Target

Wonseong County, where nutrition education has been conducted, was selected as nutrition education county (NE County) and Hyeongseong County, where nutrition education has not been conducted, as control county.

The effect of this nutrition education was analysed by comparing nutrition status, food consumption patterns, knowledge and attitude toward health and the change and the difference between two groups through interview. For NE group, further evaluations and responses on nutrition education activities (lecture, education, educational aids and materials and other education activities) were surveyed and reviewed by interview.

Survey area and objects are as follows and further detail contents are prepared in Appendix 7.

a. Survey Area

In Wonseong County (NE County), they cover 2 Ri in Socho Myon, 2 Ri in Heongup Myon, 2 Ri in Sinrim Myon, 1 Ri in Chichung Myon and Hyengseong County (Control Group) covers Chongryong Ri in Hyengseong Myon.

b. Samples

a) Comparative interview samples in NE County and Control County :

	NE County (household)	Control County (household)
Housewives	200	50
Students (primary school)	50	50

b) Survey sample of Civil Defence Forces, key staffs of institutes and social workers in Wonseong County :

	Number (persons)	Remark
Civil Defence Forces	132	* County Government officials
Key Staffs of Institutes in County	6*	** Worker of Health Center, Primary school teacher, and County ORD extension officers
Social Workers	31**	

2) Area and Person for 24-Hr Recall Survey

Survey area and sample of 24-hr Recall Survey for the children, pregnant and lactating women prepared in Appendix 7.

3) Area and Person for Food Nutrition and Health Survey

Survey area and sample for the survey of various health situation and food/nutrition consumption as in Appendix 8.

a. Survey area

They cover 2 Ris in Munmak Myon and 2 Ris in Chichung Myon, 2 Ris in Sinrim Myon, 1 Ri in Socho Myon, 1 Ri in Heongup Myon of NE County and 3 Ris in Hyeongseong Myon of Control County. These area are selected for the survey, and foods nutrition status and health survey areas are selected and surveyed in the same area as interview survey area.

b. Samples

	NE County	Control County
Household	160	30

4) Sampling Method

In principle, it is selected by the systematic random sampling in NE County and Control County.

4. ANALYSIS AND EVALUATION METHOD

1) Time Schedule of Analysis and Evaluation

The time schedule for analysis and evaluation of Wonseong County Model Nutrition Education Project is enclosed in Appendix 6 and is shown briefly as follows.

a. Interview Survey

The first (housewives, students, social workers):

May 27th-30th, 1980

The second (Key staffs of County Institutes):

June 27th, 1980

The third (Civil Defence Forces):

June 21th-28th, 1980

b. 24-hr Recall Survey

May 27th - 30th, 1980

c. Nutrition and Health Survey

July 9th - 20th, 1980

2) Organization of Team for Analysis and Evaluation

a. Interview survey and 24-hr recall survey

They are consisted of Evaluation Committee (Mr. Hong-Sik Cheigh, Jin-Soon Ju, Sung-Kyu Chun, Myong-Yoon Park, Kyong-Koo Choe, Ms. Heang-Bo Kim), Ms. Pyung-Ja Lim (Office of

Rural Development) and 42 ORD extension workers. The list of their names is prepared in Appendix 9.

b. Nutrition and health survey

Drs. Jin-Soon Ju, Woo-Ik Hwang, Choong-Kun Yoo, Song-Dong Lee of Medical College, Korea University, dieticians and research workers are among 50 members of this survey. The list of their names is enclosed in Appendix 10.

3) Field Survey Operation Method

a. Interview survey

a) Preparation of questionnaire

Questionnaires for housewives (A type), for primary school children (B type), for social worker (C type), for Civil Defence Forces (D type) were prepared. These questionnaires were designed for the time required of interview within 40 minutes for adults and 15 minutes for primary school children (see Appendix 44).

b) Field survey method

The survey was carried out in each of the selected households of NE County and Control County. Each interviewer visited to 4-5 selected households in a day with questionnaires and recorded on the household characteristics, food consumption pattern,

NE responses and knowledge/attitudes/behavior about nutrition and health according to the contents of questionnaire.

b. 24-hr recall survey^(23,24)

One surveyor lived with housewife in the selected house for 24 hours and examined by proposed designs on the food purchasing, cooking, processing, consuming and measured accurate amount of consuming foods. Special efforts were made to have the survey results on the amount of foods and nutrition intake of pregnant, lactation women and preschool children.

c. Nutrition and health survey^(23,24)

a) Food consumption survey

Each examiner recorded food consumption of two selected households at a time for three consecutive days. The total weight of every meals of the day was measured along with the weight and family status.

b) Health survey

Anthropometry and clinical examinations were conducted on the selected households, and doctors visited every selected households for family members' medical check-up. Predifined signs were recorded as positive or negative. Children also received medical examination by pediatrician. Anthropometric data such as weight, height, arm circumference and skin fold of each family members were measured and surveyed.

4) Biochemical Tests and Parasites Examination (23,24)

a. Hemoglobin level

Collected blood from sampled persons were analyzed for hemoglobin with cyanmethemoglobin method.

b. Parasite test

The collection and examination of stool specimens from selected families members for intestinal parasites such as roundworm, trichocephalus, hookworm and tapeworm.

5) Observation of Concerned Official's Opinion

Evaluation committee conducted firsthand interview with concerned government officials in Wonseong County including County chief, head of Rural Guidance Office (County ORD), head of Health Center, inspector of the Office of Education, the head of Model Nutrition Project Center, leader of Nutrition Improvement Club for the collection of the related data on NE activities and their responses.

6) Data Analysis

Compiled contents of interview survey by questionnaire were classified and programmed, and then they were computerized by CDC CYBER 73-18 computer in KIST. 24-hr recall survey data from the vulnerable groups of selected preschool children, pregnant and lactating women were also processed by computer. At this moment, the calculation of nutrition intake was based on Food composition Table in Recommended Dietary Allowance for Korean. (25) And the results obtained by nutrition and health survey were classified and calculated in common process.

III. GENERAL SITUATION IN WONSEONG COUNTY

1. GENERAL INTRODUCTION

Wonseong County, situated in 127 degrees of east longitude and 37 degrees 21 minutes of north latitude, has a total area of over 75,222 km² with farmland of 12,060 ha, forests and fields of 57,050 ha and the rest areas of 4,700 ha. As is shown in Appendix 1, this county lie adjacent to Hyenseong County in the north, to Yojoo County in Kyungki Province in the west, to Choogwon County in Chungbuk Province in the south, to Yongwal County in the east, and to Jaechun County in Chungbuk Province in the Southeast. Wonseong County is bounded by Taebek Mountain and the River Sum and the River Namhan flow through this County.

The average annual temperature shows 12.3°C and the average amount of annual rainfall reaches 1,129 mm. Consisted of 9 Myons (Socho, Hojea, Chichung, Booron, Kire, Heungup, Panpu, Sinrim) and 125 Ris and 380 kinship villages, this Wonseong County has a total population of 68,105 (men 34,560, women 33,545) and 13,123 households. The average number of a family are 5.2 persons and farmhouses are 9,435 houses, 71.8% of total families and 50,565 residents are engaged in farming.

12,636 radios and 5,598 television sets have come into wide use at the rate of one-household one-radio and 2 households one-television sets. Besides 10,916 residents (16% of entire population) are Christians and the rest are Catholics, followers of Holiness Church, Seventh-Day Adventist Church,

Buddhists and so on. Buddhists are largest (48.7%) of them, and followed by Catholics (17.9%) and Methodists (15.6%).

2. EDUCATION, HEALTH AND HYGIENE SITUATION

1) Education

There are 45 primary schools, 8 middle schools, 2 high schools, 3 high civic schools and 2 technical schools in Wonseong County. Through above mentioned educational institutions, 6,256 students had already graduated and 17,329 students attended school in 1978. ⁽¹⁰⁾

2) Health and Hygiene

Wonseong County has 13 health centers including 4 hospitals, 1 herb hospital and 8 branch health centers. Through health centers, this county drieved preventive inoculation activities against infectious disease, tuberculosis control and family planning project.

To sum up the general situation of these projects in 1978, i) As for preventive inoculation project against infectious disease, 57,904 residents of population were received preventive inoculation against infectious disease such as vaccination for smallpox, DPT, cholera, typhoid, infantile paralysis and brain inflamation, ii) As for tuberculosis administration, 208 persons of 10,318 sampled residents were diagnosed as infected patient by X-Ray and sputum examinations, iii) As for family control, 4,306 residents registered at each health centers and received

information for family planning.

Meanwhile, it was proved that 4,417 households, 21,700 persons, 31.8% of entire population, enjoyed the simple frame waterworks (93 places) which is the source of county residents' potable water. (10)

3. FOOD INTAKE AND NUTRITION SITUATION

1) Food Product Situation

Food crop produces in Wonseong County are mainly rice (295,000 tons), barley (2,670 tons), miscellaneous cereals (1,263 tons), bean (4,249 tons) and sweet potatoes (3,758 tons). The production of vegetable and fruits amount to 28,194 M/T in 1,681 ha and 765 kg in 531 ha respectively.

Judging from food crops supply, the amount of production in Wonseong county doesn't meet resident's demand and only 70-80% of demand is filled. Besides, they breed 8,632 cows, 10,429 pigs and chickens, rabbits and keep bees too. (10)

2) Food Intake Status

In 1976, before starting Wonseong County Model Nutrition Education Project, the total daily intake of adult persons in Wonseong County was indicated as 1,009g and among this intake, cereal intake ranked as 445g (44%), sweet potato and potato as 248g (25%).

The intake rate of animal foods marked 2.0% of a total food intake. For infants, daily intake per capita was noted as 226g for one year old, 428g for 2 years old, 724g for 3

years old and animal food intake marked an average 3.5% of total. (7)

3) Nutrition Status

Table 1 show the findings of survey conducted on the status of nutrition of Wonseong County people at the selected areas of 4 RIs in Wonseong County. (7)

As for infants in the age brackets of 1 to 4 years, the intake of nutrient values is indicated as 886 Kcal and 27.1g of protein, which falls considerably behind the recommended level of calory and protein intake of 1,100 Kcal and 30g, respectively. Similar shortages are also noted on adults. Besides, calcium and vitamin A, B₂ deficiencies are prevalent and the report also noted some clinical signs resulting from deficiency of vitamin B₂.

Table 1. Average Intake of Nutrient at Wonseong County
(Per Capita Per Day : 1976)

Nutrient	Child (1-4 age)			Adult (Pregnant)		
	Intake	Recommended*	Difference (Gap)	Intake	Recommended	Difference (Gap)
Cal (Kcal)	886	1,100	-214	2,118	2,500	-382
Protein(g)	27.1	35	-7.9	73.7	100	-26.3
Ca (mg)	180.5	500	-319.5	297.8	1,200	-902.3
Fe (mg)	7.8	15	-7.2	13.8	18	-4.2
Vitamin A (IU)	708.5	4,500	-3,791.5	2,401.2	10,500	-8,098.8
Vitamin B ₂ (mg)	0.5	0.7	-0.2	1.1	1.7	-0.6

* FAO/Korea: Recommended Dietary Allowance (1975)

4. EXISTING NUTRITION-RELATED PROJECT IN WONSEONG COUNTY

Along with Wonseong County Model Nutrition Education Project under the management of MFM/Korea, other nutrition-connected projects in Wonseong County were being underway as follows :

1) Farm Operation for Nutrition Project

For the improvement of nutrition in Wonseong County people, "Wonseong County Model Nutrition Project Center" was established as affiliated institute of Wonseong County Office.

It manages some 62.7 ha of farmlands transformed by river basin cultivation. Wonseong County authorities invests and support the production of HNLC foods at the Wonseong County High-Nutrition Food Production Plant by providing produced provisions or some its profits in their farmlands. Produced HNLC foods are provided for poor persons in Wonseong County with or without compensation.

2) Operation of High-Nutrition Food Production Plant

To build up long-term basis of nutrition project in Wonseong County, they run a food production plant along with farm operation. This plant (production capacity : 1.0 ton/ 10 hrs) was established in March 1979 by Wonseong County authorities and MFM Foundation. KIST and MFM were in charge of the development of production system and HNLC foods for this plant.

At present, they produce nutritious snack (named "Kongchoa" "Wooranga") in which protein, mineral (calcium,

iron), vitamin (A, B₁, B₂, Niacin) are enriched.

3) Program for Rural Development and Health Improvement

Wonseong County also has County ORD (Rural Guidance Center) and Health Center as other counties likewise. General activities for the improvement of dietary life and health status of Wonseong County residents were performed by these two institutes.

IV. SUMMARY AND ACTIVITY OF WONSEONG COUNTY MODEL NUTRITION EDUCATION PROJECT

1. THE GOAL OF PROJECT

For the purpose of improving the nutrition status of rural population and dietary life of rural community, MFM/Korea conducted country-level nutrition education project, namely "Wonseong County Model Nutrition Education Project", covering 64,000 residents of 125 RIs in 9 Myons of Wonseong County for 3 years (1978-1980).

MFM/Korea attempted the improvement of residents' nutrition status resulted from this nutrition education which would be accomplished through a network of training programs and consciousness raising campaign. And also this project intended to raise the awareness of the national and local government about the importance of nutrition and the effectiveness of this program in particular. It was hoped that this demonstration project would be served as a model to the national government of Korea for rural nutrition education programs throughout the country.

2. SCALE OF PROJECT

This NE project was worked out during the period of 1978-1980 with a total budget of 19,942 dollars as shown in the contents of budget expenditure from February of 1978 to

June of 1980 (see Appendix 3).

MFM/Korea started this model NE project with the support of Wonseong County Office, Wonjoo City Education Office, and USAID/K and three NE staffs in MFM/Korea with other 90 persons including the workers of Health Center, members of Rural Guidance Office and primary school teachers in Wonseong County actively participated in this NE project (see Table 2).

As shown in Appendix 2, this project became the first example of NE activity in Korea which both government officials and training workers of non-government institutes conducted nutrition education to the total population with the system for transmitting nutrition information to the people of Wonseong County. This system headed by the MFM/Korea staffs who was coordinated with County nutrition officer, social workers, Homeland Reserve Forces leaders, saemaul village leaders, Nutrition Improvement Club leaders and primary school teachers.

Table 2. Nutrition Education Staffs for Wonseong County Model NE Project (1978-1980)

Organization	Function	Number (person)	Remarks
MFM/Korea	NE supervisor	1	Principal staffs
"	NE trainer	2	"
Health Center (County)	Health officer	2	Supporting staffs
Health Center (Branchs in Myon)	"	26	"
Rural Guidance Office	Extension officer	2	"
Primary school	Teacher	60	"
Total		93	

3. ACTIVITY CONTENTS OF PROJECT

The activities for the project were covered and classified as : 1) NE training, 2) monitoring and self-evaluation, 3) development and production of educational aids and materials, 4) and other activities such as NE on nutrition demonstration school, workshop, various contest as shown in Appendix 4.

1) Nutrition Education Training

Nutrition education was conducted continuously on about 64,000 residents including three days training for 11,496 men of Homeland Reserve Forces (HRF) and seven days training 6,426 men of Civil Defence Forces (CDF) in Wonseong County. Social workers such as officials of health center/Rural Guidance Office, primary school teacher, NIC/Saemaul leaders and participants at the Kanahan Farmers Training Institutes were attended at NE training program. The village peoples also received the nutrition information by social workers who had attended NE program during small meeting in their village (see Appendix 5).

2) Development of Nutrition Education Aids/Materials and Radio Program

a. Educational aids and materials production

To enhance the NE efficiency, educational aids and materials, which are easily understood in contents aspect than that of thus far published, were developed and produced. Produced materials reach a total of 23 kinds such as slides, booklet, tapes, pamphlets and flip charts. This materials

were used and widely distributed to social workers and village members.

b. Media program

Radio program was prepared and NE conducted through local radio networks on 30 minutes broadcasting a week by MBC and 5 minutes every day by KBS.

The contents of broadcasting programs are consisted of subjects such as basic nutrition (21 times), food selection and nutrition (25 times), and nutrition and health (95 times).

3) Others

One hundred twenty five NICs were organized and NIC leaders shared their knowledge which obtained from NE program to village members. NIC members created their own fund for nutrition improvement program. On the other hand, a Nutrition Demonstration School was chosen and 247 children and 7 teachers of this school attended intensively NE regular program. And also various activities including workshop, seminar, cooking demonstration/contest etc. were prepared during the period of three years as shown in Appendix 5.

During the process of NE project, MFM/Korea continued their efforts to raise the government awareness on nutrition education. Government awareness activities at the local and national level were carried out through the meetings of NE project's Advisory committee, workshop and seminar.

4) Monitoring and Self-Evaluation

Monitoring and self-evaluation were conducted to measure nutrition status and used as educational tools for NE staffs. Annual Evaluation Report by MFM/Korea on NE project indicated that NE had nearly universal recognition at the governments of county/national level and all NE participants have accepted the importance of nutrition for health and well-being. It also said that NE project have made excellent progress towards accomplishing their goal of obtaining of knowledge and having families put their nutrition knowledge into practice. (6)

V. CHARACTERISTICS OF FAMILIES AND PERSONS
CONTACTED FOR THE ANALYSIS AND EVALUATION

1. CHARACTERISTICS OF INTERVIEWEES

1) Housewives and Civil Defence Forces

a. Age

The age distribution of sampled housewives and CDF members is prepared in Table 3-1, many of sampled housewives were in their forties and formed 31-33%, their twenties, and thirties 26-27% and in their fifties 13%. There was no remarkable difference between NE County and Control County, but the age distribution rate of housewives in their fifties in Control is a little higher than those in NE County.

Also, CDF members indicated the similar ranking to those of housewives but those in their forties formed 62%, considerably high rate.

b. Educational level

As is indicated in Table 3-2, the majority of housewives finished the course of primary school or leave the school in mid-course (70% of entire sampled housewives) and those who completed the Middle School hold 26.4% and 10.2% in NE County and Control County, respectively.

Meanwhile, CDF members who completed high school hold 36%, Middle school 19%, primary school or mid-courser 23%. These figures show that their educational level is higher than that of housewives.

Table 3. Percentage distribution of age and educational level of persons examined

3-1. Age

Age (years)	Housewives			CDF members (132)
	NE County (200)	Control County (50)	Total (250)	
20 - 29	27.9%	22.4%	26.8%	7.6%
30 - 39	26.9	28.6	27.2	23.5
40 - 49	31.3	32.7	31.6	62.1
Over 50	11.9	16.3	12.8	2.3
No answer	2.0	-	1.6	4.5

39

3-2. Educational level

Level	Housewives			CDF members (132)
	NE County (200)	Control County (50)	Total (250)	
Primary school graduate	65.7%	85.7%	69.6%	22.7%
Middle school graduate	26.4	10.2	23.2	18.9
High school graduate	6.0	4.1	5.6	35.6
College graduate	0.5	-	0.4	12.9
No answer	1.5	-	1.2	9.8

c. Family numbers of a household and pre-school children

The average family numbers of a household are 6.1 persons in NE County, 5.5 in Control County and 5.9 of CDF members. They mark average 6 numbers on entire selected persons, and the numbers of pre-school children are mostly 1-2 in a household (see Table 4-1, 4-2).

d. Occupation of householders and annual average income

The occupation of householders are mostly farmings. Housewives form 61.7% in NE County, 96% in Control County. In NE County, government officials hold 22.4%, merchant 6.0%, and other occupations 8.5%. In CDF members, farmers hold 39%, government officials 32%.

The annual average income of housewives rank 1,000,000 won -1,500,000 won (1 US\$ means about 620 won) with 31% and not exceed 1,000,000 won with 19% in NE County, 33% in Control County, and above 1,500,000 won with 44% in NE County, 35% in Control County. These figures show the income level of housewives in NE County is a little higher than that of housewives in Control County. Meanwhile, CDF members show 43% in not exceeding 1,500,000 won brackets. According to Farm Economy Study Report by the Ministry of Agriculture and Fishery, the average income of a farm amounts to 1,884,194 won (1978). Compared with that we might say they have a somewhat low income level (see Table 5-1, 5-2).

Table 4. Percentage distribution of family numbers and number of pre-school children of households examined

4-1. Family numbers

Number (persons)	Housewives			CDF members (132)
	NE County (200)	Control County (50)	Total (250)	
Under 4	32.3%	32.7%	32.4%	14.4%
5 - 6	41.3	30.6	39.2	50.7
7 and over	24.4	36.7	26.8	28.1
No answer	2.0	-	1.6	6.8
Average	6.1 persons	5.5 persons	5.6 persons	5.9 persons

4-2. Number of pre-school children

Number (persons)	Housewives			CDF members (132)
	NE County (200)	Control County (50)	Total (250)	
1 - 2	47.3%	49.0%	47.6%	44.7%
3 - 4	9.5	12.2	10.0	12.3
5	1.0	-	0.8	2.3
No answer	42.3	38.8	41.6	40.2
Average	1.1 persons	1.7 persons	1.6 persons	2.0 persons

Table 5. Percentage distribution of occupation and annual average income of persons examined

5-1. Occupation

Occupation	Housewives			CDF members (132)
	NE County(200)	Control County(50)	Total(250)	
Farming	61.7%	95.9%	68.4%	38.6%
Government official	22.4	-	18.0	31.8
Merchant	6.0	4.1	5.6	5.3
Others	8.5	-	6.8	9.1
No answer	1.5	-	1.2	15.2

42

5-2. Annual average income

Income (Won)	Housewives			CDF members (132)
	NE County(200)	Control County(50)	Total(250)	
Less 1 million	18.9%	32.7%	25.6%	24.2%
1 - 1.5 "	30.8	32.7	31.2	18.9
1.5-2.5 "	29.4	16.3	26.8	26.5
2.5-3.5 "	10.0	12.2	10.4	12.1
Over 3.5 "	4.5	6.1	4.8	8.3
No answer	1.5	-	1.2	9.8

* (1 US\$ means about 620 Won)

e. Size of paddy fields and up-lands owned

In case of the housewives, the size of whose paddy field ranged roughly from 500 to 2,000 pyong are 50% of the whole. CDF members have 23% rate of the whole whose paddy field ranged roughly from 500 to 2,000 pyong. The greater parts didn't answer for the occupational distribution of their farmlands. On the other hand, they owned dry field mostly smaller than 1,500 pyong (54% of the whole) (see Table 6-1, 6-2).

2) Primary School Students

Fifty children were selected from NE and Control County as the subject of investigation. In case of NE County 25 of them were fifth grade student, and the rest sixth grade. And in case of Control County all of them were the sixth grade (see Table 7).

3) Social Workers

The Social workers in NE County were 19 persons of the Health Center officials, the primary school teachers (7 persons) and others (5 persons). The age of them were around 20 to 40 years old (22 persons) and over 40 years old (9 persons), and 74.2% of them were the high-school graduates (see Table 8).

2. CHARACTERISTICS OF FAMILIES AND PERSONS FOR 24-HR RECALL SURVEY

From the already-selected interview-subjects of Control County, we reselected with the consideration of the growing children, pregnancy and lactating women, and these samples are explained in Table 9.

3. CHARACTERISTICS OF FAMILIES AND PERSONS FOR ANTHROPOMETRY AND CLINICAL EXAMINATION

Distribution of age and sex of persons examined for anthropometry and clinical test was shown in Table 10. The number of examined persons was 913 and 178 in each County of NE and Control respectively. There were 157 preschool children (1-5 years old in NE County) and 30 preschool children (Control County), and also 61 persons and 6 persons of pregnancy/lactating women in NE and Control Counties respectively.

Table 6. Percentage distribution of areas of paddy field and dry field owned by persons examined

6-1. Paddy field

Area (pyong)	Housewives			CDF members (132)
	NE County (200)	Control County (50)	Total (250)	
Less 500	3.5%	4.1%	3.6%	3.0%
500 - 999	16.9	24.5	18.4	3.8
1,000-1,499	17.4	12.2	16.4	6.8
1,500-1,999	13.4	20.4	14.8	12.9
2,000-2,999	9.0	20.4	11.2	9.1
Over 3000	7.0	10.2	7.6	9.9
No answer	32.8	8.2	28.0	54.5

6-2. Dry field

Area (pyong)	Housewives			CDF members (132)
	NE County (200)	Control County (50)	Total (250)	
Less 500	19.9%	14.3%	18.8%	3.8%
500 - 999	17.9	24.5	19.2	3.8
1,000-1,499	14.4	22.4	16.0	9.8
1,500-1,999	7.5	6.1	7.2	6.1
2,000-2,999	2.5	6.1	3.2	7.6
Over 3,000	6.0	4.1	5.6	13.8
No answer	32.8	18.4	30.0	55.3

Table 7. Percentage distribution of school year in primary school students examined

School year	NE County(50)	Control County(50)	Total
5th grade	50%	- %	25.0%
6th grade	50	100.0	75.0

Table 8. Percentage distribution of age, occupation and educational level of social workers

Age (years old)		Occupation		Educational level	
20-29	35.5%	Health center staffs	61.3%	High school graduate	74.2%
30-39	35.5	Teacher	22.6	College graduate	22.6
Over 40	29.0	Others	16.1	No answer	3.2

Table 9. Number of persons for 24-hr recall survey

Survey area	Numbers of persons
NE County	
Pre-school children (0-6 years old)	73
Pregnancy	8
Lactating women	16
Control County	
Pre-school children (0-6 years old)	17
Pregnancy	1
Lactating women	5

Table 10. Distribution of age and sex of persons for anthropometry and clinical examination

(Unit: persons)

Age(year)	NE County			Control County		
	Man	Woman	Total	Man	Woman	Total
1 - 3	69	46	115	13	10	23
4 - 6	82	73	155	17	11	28
7 - 9	31	49	80	7	11	18
10 - 12	27	38	65	6	6	12
13 - 15	13	26	39	3	4	7
16 - 19	12	6	18	1	3	4
20 - 60	184	211	395	37	41	78
Over 60	16	30	46	3	5	8
Total	434	479*	913	87	91*	178
* Prenancy		(10)			(1)	
* Lactating women		(51)			(5)	

VI. EVALUATION OF NUTRITION EDUCATION ACTIVITIES AND EDUCATIONAL AID AND MATERIALS

1. SYSTEM AND ORGANIZATION OF EDUCATION ACTIVITIES

1) System of Nutrition Education

NE system for Wonseong County Model NE project was as shown in the scheme of Fig. 1, giving to the residents a direct education and to NIC leaders/social workers a delivery education. This scheme demonstrated the possibilities of the maximum cooperation between the government organization and non-government institutes. And also this was one of the demonstration of a community based education outreach system through a network of training programs and consciousness raising campaign.

It was considered that the relatively heavier works were imposed on the NE supervisor of MFM/Korea at Seoul office and NE trainer of MFM/Korea at County area, however, the education could be greatly reinforced by the support-activities of NIC leaders and social workers. It was noted that rapid mutual cooperation between the NE supervisor in Seoul office and NE trainer in NE County, and also MFM/Korea NE staffs and government officials including social workers should be necessary for the maximum results. In this system NE supervisor should become familiar with the capacities of local workers and local conditions.

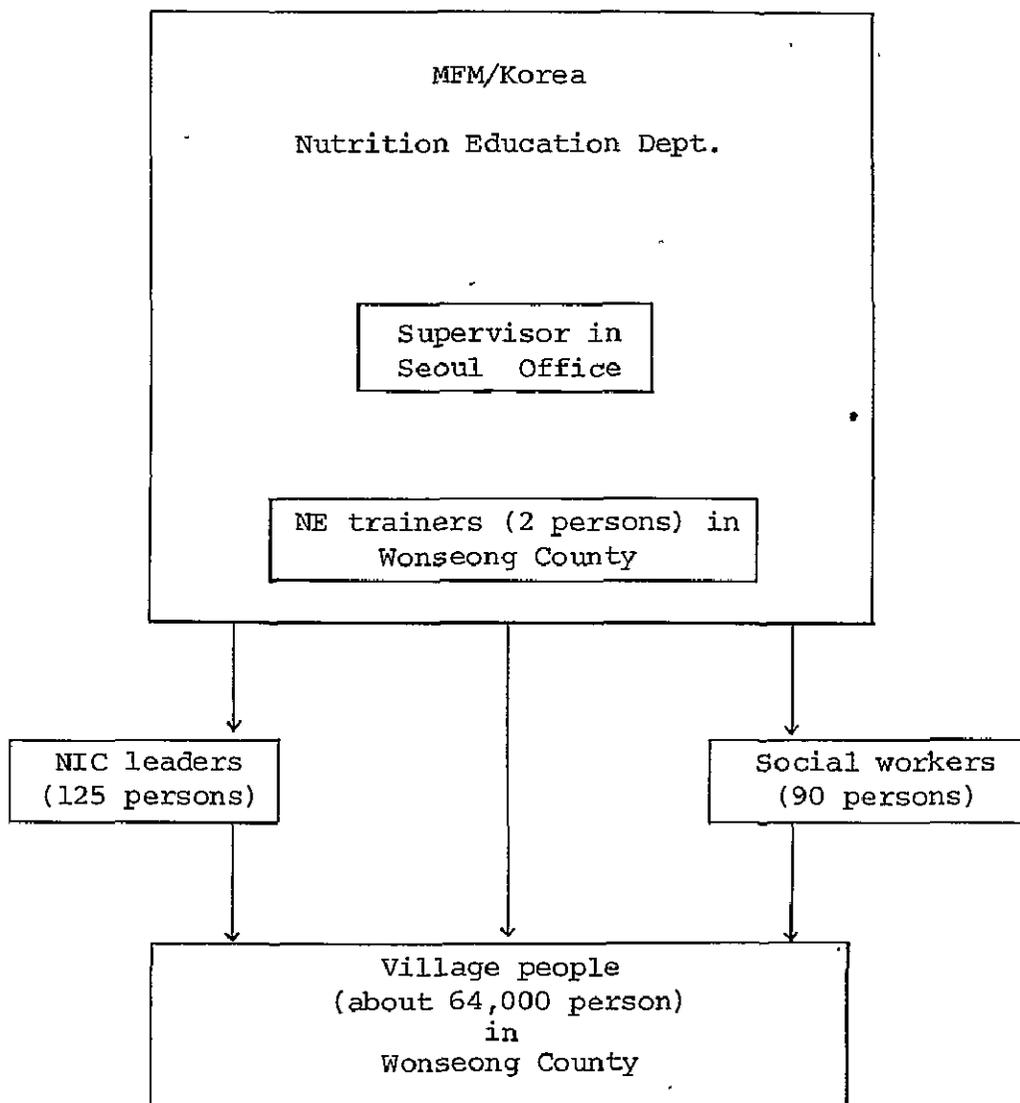


Fig. 1. Scheme of educational system of W.S. Model NE project

2) Organization and Roles of MFM/K Education Staffs

MFM/Korea's NE staffs are total three persons including one supervisor and two NE trainer. Their ages were all in the thirties, and they were majored in nutrition or nutrition-concerned fields in the university, and could fit the organizational structure of a rural community. As it was said earlier, supervisor was responsible in the service of the education planning, development of NE materials, cooperative adjustment between the central/local government, and concomitant administrative support activities. To do this, it is probable that supervisor often come and go to the project area, and spend much time by field trip for the consultation with the NE trainer and the other activities. The two persons of the NE trainer who only take whole charge of the spot-education, conducted the residents education on the basis of group(guide) education, individual(guide) education, broadcasting education, and other activities. It was observed that two persons are rather small man-power for conducting NE project in the area, however, with the support of concerned staffs in Wonseong area, NE could be successfully executed. In spite of the short terms of education, it was found their activities were very energetic considering that 41.5% of housewives and 22.7% of CDF members answered they had gained the nutrition knowledges from the MFM/Korea's staffs (see Appendix 11).

3) Participation and Role of Local Social Workers

The Model NE project was conducted with the support of the Wonseong County office and 90 persons of

County Guidance Officers, Health Center staffs, primary school teachers, as delivery educator. These filled up the man-power deficiency of this model project, and bear a part of the delivery teacher through receiving a planned MFM/K nutrition education. And it was pointed out that they got a great help for managing their own business themselves, so we might say this participation of County officers was a very desirable phenomenon. And also, they were in the twenties & thirties by age and high-school graduate career or above.

An absolute majority (97%) of them indicated the necessity of nutrition education in rural area (see Table 11). On the other hand, 81% of the whole said the role of the delivery teacher was desirable as shown in Table 12-1. Social workers who felt dignity about the role of the nutrition education staff were 65% of the whole (69% for the Health Center staffs, 29% for teachers), and among them the "pure desirable" was 41.9%, a considerably low rate compared with the 'desirable' answering 81% (see Table 12-2).

According to the five-points-scoring-method, the point of the "role" was 4.26 ("more or less desirable"), and that "dignity" was 3.6 ("so so") (see Table 12-1, 12-2, 12-3).

Especially it was considered that the energetic activities of the County Health Center staffs concerning NE program in the future were highly expected. And also most of them (74.2%) had a delivery NE experience (see Table 12-4).

Table 11. Percentage distribution of the necessity of NE in rural community (Social workers questioned)

Necessity degree	Total (31)	Occupation			Educational level	
		Health centre staffs (19)	Teacher (7)	Other (5)	High school graduate (24)	College graduate (7)
Very necessity	81.7%	94.7%	57.1%	100.0%	91.7%	71.4%
A little necessity	9.7	-	42.9	-	4.2	28.6
Little necessity	3.2	5.3	-	-	4.2	-

Table 12. Percentage distribution of responses on the role and dignity as social worker in terms of NE

12-1. For their role*

	Total average (31)	Occupation		Educational level	
		Health centre staff (19)	Teacher (7)	High school graduate (24)	College graduate (7)
Pure desirable for their role**	77.5%	73.6%	85.7%	75.0%	85.7%
Average (point)***	4.26	4.26	4.00	4.17	4.57

* "No answer" not included

** Pure desirable = (very or a little desirable %) - (little or not desirable %)

*** Average : means 5 point for very desirable, 4(a little), 3(so so), 2(little) and 1(not desirable) for their role in the 5 point scoring method

12-2. For their dignity*

	Total average (31)	Occupation		Educational level	
		Health Centre staff (19)	Teacher (7)	High school graduate (24)	College graduate (7)
Pure dignity*	41.9%	42.2%	0.0%	41.6%	42.9%
Average (point)*	3.68	3.63	3.00	3.63	3.86

* See Footnote of Table 12-1

12-3. Reasons for positive/negative response to their role and dignity

Reasons	Very desirable (8)	A little (12)	So so (4)	Little desirable (7)
No answer	25.0%	16.7%	75.0%	14.3%
Useful nutrition knowledge	25.0	41.7	-	-
Good for public health	37.5	33.3	-	-
Other good reasons	12.5	8.3	-	-
Bad NE contents	-	-	-	71.4
Other bad reasons	-	-	25.0	14.3

12-4. Experience on delivery NE to peoples

	Total (31)	Occupation			Educational level	
		Health Centre staff (19)	Teacher	Other	High school graduate	College graduate
No experience	25.8%	10.5%	85.7%	- %	16.7%	57.1%
Yes	74.2	89.5	14.3	100.0	83.3	42.9

4) Organization and Application of Nutrition Improvement Club

Leaders of Nutrition Improvement Club (125 persons of Myon & Ri) received the first-step NE by MFM/Korea staff on the nutrition, and they delivered to the neighboring 3-5 families' housewives for their gained nutrition knowledge.

It was found that the resident's volunteering participations and mutual exchange of informations resulted in the awaring importance of nutrition and dietary life of rural area. According to the analysis on the Nutrition Improvement Club's role as promoting nutrition improvement by the social workers shows that 73% affirmatively answered "most or a little profitable" as shown in Appendix 16. The rate of the five-points-scoring method on their result indicated that roughly social workers of the Health Centre staffs rather than the teachers, social workers of the college graduates rather than the high school graduates answered, showed positive reactions about the role of the Nutrition Improvement Club.

Table 13. Role and their activity of NIC
(Social workers questioned)

	Total average (31)	Occupation		Educational level	
		Health Centre staff (19)	Teacher (7)	High school graduate (24)	College graduate (7)
Pure desirable	67.7%	68.4%	42.9%	33.4%	85.7%
Average (point)	3.97	3.94	3.71	3.96	4.00

2. SUITABILITY OF EDUCATION APPROACH & CONTENTS

1) Selection of the Village People for Education

The subjects of the Model NE project were housewives, NIC leaders, Saemaul leaders, CDF members, Homeland Reserve Forces members, primary school children in W.S. County area residents and the Health Center staffs, the Rural guidance officers, teachers, the last three of which were made the social worker as delivery educator.

In selecting the subjects for NE, it was noted that they emphasis on the male adults such CDF members and Homeland Reserve Forces members considering the characteristics of Korean family system.

In indicating the subject who must receive the nutrition education, 75% of CDF members firstly considered for housewives, and 47% secondly for fathers, so it seems to be reasonable that MFM/K staff selected the male subject in addition to housewives (Table 14). But 33% of the social workers said the subjects and the time of NE during farming season to be in appropriate.

Table 14. Percentage distribution of actual problems confronted from Model NE project

Problems	Total (31)	Occupation			Educational level	
		Health Centre staff (19)	Teacher (7)	Other (5)	High school graduate (24)	College graduate (7)
Lack of NE materials	16.1%	15.8%	28.6%	- %	20.8%	- %
Unbalanced nutrition knowledge	9.7	10.5	14.3	-	4.2	28.6
Bad selection of NE time and place	32.3	36.8	28.6	20.0	33.3	28.6
Wrong NE contents of nutrition	6.5	5.3	14.3	-	4.2	14.3
Too scientific NE	29.0	26.3	14.3	60.0	29.2	28.6
Others	6.5	5.3	-	20.0	8.3	-

2) Time and Place of Education and Participation/
Contact Eagerness of People

Nutrition education was conducted during the year except farming seasons of June and October for villagers, every month as regular program for social workers and during the nutrition-concerned course of their study for students. NE places were chosen at each of NIC leaders house, village hall, public buildings (County office, Health Center, Catholic hall), and at school. About the selecting of the time and place of education, 38.8% of housewives respondents, 18.8% of CDF members answered "well selected" (see Appendix 12-1, 12-2).

The total average frequency in attendance to NE was 4.1 times (the housewives questioned), 1.7 times (CDF members

questioned). But to say as a whole, the rate of the housewives and the CDF member who equally attended 1-2 times, was most high (The former 59%, latter 76%) (see Appendix 13-1, 13-2).

On the other hand, the NE printed matter contact (receiving and reading) frequency by subject was also mostly 1-2 times (The housewives 38%, CDF member 77%) (see Appendix 14-1, 14-2).

The frequencies of the housewives (average contact frequency 4.4 times) was greater than that of CDF members (average 2.4 times). And still, housewives who were over-forties under primary school career had roughly 5 times contact frequencies and the twenties-high school graduate-CDF members recorded average 2-3 times frequencies as the highest average contact frequency.

The listening frequency of the NE broadcastings, in case of the housewives, tended to increase in accordance with the educational level, and the greater part of them indicated 1-2 times per a month (32%), 1-2 times per an week (27%). In case of CDF members, 31% listened less than one times per a month, and 25% listened 1-2 times per a month, so it also appears that the housewives listened more frequently than CDF members. And considering an age bracket, the twenties/thirties/high-school graduates, over high school carrier housewives, and twenties high school graduate CDF members appeared to be more frequent listeners (see Appendix 15).

In the aspect of the subject's eagerness about the NE as a whole, 58% of the housewives said "participated because I felt it necessary" having no connections with the ages or educational levels, and 32% of them said "I participated because there was a program", but CDF members who said like

the former was 35% and the latter 26%. It was considered that the housewives were more eager about participation in the NE. The social worker who said the necessary and eager for participation were 64.5% of the whole, and among them, the Health Center staffs (63%) appeared to more eagerly participate than the teachers (43%). Considering the educational levels, the high school graduate workers (68%) were relatively more eager of the participation than the college graduate social workers (57%). Generally speaking, in case of the housewives of the twenties-high school graduates and in case of the CDF members of the forties-primary school graduates were more eager (see Table 15-1, 15-2 and 15-3).

3) Method of Education and Training

The principal education methods of the villagers and the social worker were the individual guidance, group guidance and educational broadcasting and so on. Among these NE, 48% of the social worker defined the desired educational method as "actual training", and 39.1% of them as "free discussion" (see Table 16). Therefore, the desirable methods appeared to be that of group guidance including the case study with actual training and free discussion. The followings are the brief explanations of each methods adapted in NE.

a. Individual guidance

The individual guidance method based on the interviewing and nutrition consultations was conducted on such subjects as growing children, pregnancy and lactating women. Mostly this method was processed by the social worker of the Health Center rather than MFM/K staffs, and even

Table 15. Percentage distribution of eagerness to NE program

15-1. Housewives

Attitude to NE program	Total	Age (year)				Educational level			
		20-29	30-39	Over 40	No answer	Primary school graduate	Middle school graduate	Over high school graduate	No answer
	(200)	(56)	(54)	(87)	(3)	(133)	(51)	(13)	(3)
Participated, because felt it necessary	58.0%	66.1%	53.7%	56.3%	33.3%	54.9%	68.6%	53.8%	33.3%
Participated, there was a program	32.0	26.8	31.5	36.8	-	36.1	23.5	30.8	-
Just participated	2.5	-	3.7	3.4	-	2.3	2.0	7.7	-
Problems were money or practice and not NE, so not participated	3.0	3.6	7.4	-	-	3.0	2.0	7.7	-
No answer	4.5	3.6	3.7	3.4	66.6	3.8	3.9	-	66.6

15-2. Civil Defense Forces members

Attitude to NE program	Total	Age (year)				Educational level			
		20-29	30-39	Over 40	No answer	Primary school graduate	Middle school graduate	Over high school graduate	No answer
	(132)	(10)	(31)	(85)	(6)	(30)	(25)	(64)	(13)
Participated, because felt it necessary	34.8%	30.0%	22.6%	38.8%	50.0%	40.0%	32.0%	31.3%	46.2%
Participated, there was a program	25.8	50.0	38.7	20.0	-	16.7	24.0	31.3	23.1
Just participated	5.3	-	-	7.1	16.7	10.0	-	3.1	15.4
Problems were money or practice and not NE, so not participated	21.2	20.0	29.0	17.6	33.3	26.7	32.0	18.8	-
No answer	12.9	-	9.7	16.5	-	6.7	12.0	15.6	15.4

15-3. Social worker

Attitude to NE program	Total (31)	Occupation			Educational level	
		Health Centre staff (19)	Teacher (7)	Other (5)	High school graduate (24)	College graduate (7)
Participated, because felt it necessary	64.5%	63.2%	42.9%	100.0%	66.7%	57.1%
Participated, there was a program	32.3	31.6	57.1	-	29.2	42.9
Just participated	-	-	-	-	-	-
Not necessary, not participated	3.2	5.3	-	-	4.2	-

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Table 16. Percentage distribution of the desirable educational method for social workers

NE method	Total (31)	Occupation			Educational level	
		Health Centre staff (19)	Teacher (7)	Other (5)	High school graduate (24)	College graduate (7)
Demonstration & practice	47.8%	52.9%	- %	40.0%	55.0%	- %
Free-discussion	39.1	35.3	-	60.0	30.0	100.0
Lectures	8.7	5.9	100.0	-	10.0	-
Mass-media	4.3	5.9	-	-	5.0	-
Printed materials distribution	-	-	-	-	-	-

though it was conducted on small number of people, it was judged to be secure one of best delivering NE.

b. The group guidance

The group guidance was a method conducted on the residents, social worker and students through the workshop, lectures, seminars, promotion contests, study lesson, inspection, exhibitions, case study and demonstration.

c. Radio NE program

Since February 1979, the NE radio program was put in operation on every Monday at 11:00 AM for thirty minutes (in the housewives' program) and everyday at 7:30 AM for five minutes, through Wonjoo MBC & KBS Broadcasting network. The broadcasting was audible at Wonseong County (model NE project area) and at Hyeonseong County (The Control County).

4) Contents of Education and Training

As it is shown in Table 17, the content of the NE and training in model NE area is classified into that for the residents (villagers), social worker and students. Though its contents was the same, separate education courses and separate educational aids and materials which the education suit to each subjects. Its content and the interest/ understanding degree about NE and training is as follows.

Table 17. The contents of NE by subjects

Contents	Subjects		
	Villager	Social worker	Primary student
Importance of food	o	o	-
Proximate food composition	o	o	o
Foods for energy	o	o	o
Food for growth	o	o	o
Importance of NE in community	-	o	-
Foods for protection and control of body	o	o	o
Balanced diet	o	o	o
Basic foods	o	o	o
Food consumption pattern of Wonseong County	-	o	-
Nutritional status of Wonseong County people	-	o	-
Preparation of menu	o	o	-
How foods are used by our body	o	o	o
Snack or supplementary foods	o	-	o
Special nutrition for vulnerable groups	o	o	-
Nutrients deficiency	o	o	o
Food habit	o	o	o
Home gardening plan	-	o	-
Management of food resources	-	o	-
Standard of living and food	o	o	-
Family welfare, family planning and nutrition	o	o	-
Food hygiene	o	o	o

a. The residents (villagers)

The contents for villagers were based on the applicable and practical information. 35.9% of the housewives and 32.7% of the CDF members said the contents of education to be very/a little easy, their educational level was high-school graduation or above. Still while the above-fifties and under primary school-career housewives and the CDF members said them to be very difficult, the housewives of thirties and fourties-above high school career-CDF members said them to be neither easy nor difficult. So we considered that a little parts of education contents and guidance-expression-method should be made separately simplified for the benefits of low-education-levelled residents (see Table 18).

Table 18. Percentage distribution of the understanding degree on the NE contents by subjects

Degree of understanding	Housewives(178)	CDF members(101)
Very difficult	3.4%	3.0%
A little difficult	18.5	19.8
Neither easy nor difficult	41.0	44.6
A little easy	29.2	19.8
Very easy	6.7	12.9
No answer	1.1	-

On the other hand, 80.9% of the housewives and 51.5% of the CDF members said the contents of education to be interesting, showing that they recognized the importance of the nutrition in the family health and consequently attended the nutrition education with more positive attitude (see Table 19).

Table 19. Percentage distribution of degree of interest on NE contents by subjects

Degree of interest	Housewives(178)	CDF members(101)
Very interest	50.0%	17.8%
A little interest	30.9	34.7
So so	8.5	36.6
Little interest	0.6	8.9
No interest	-	2.0
No answer	-	-

b. Social worker

As it is shown in Table 17, the contents of NE for the social worker were about the fundamental nutrition, food and health. The social worker said the education contents based on lectures to be easy (26%) or interesting (93.6%), and this shows that the education contents based on lectures had an great effect on their information-improving. In addition, the contents of the seminar education appeared to be considerably interesting (58.1%), and this also shows that the seminar method became the source in supply of their nutrition informations. And, as 71% of the social worker indicated the close interrelationships between the mother-child health and the nutrition education, the contents about

the nutrition will have to be more stressed during the regular health course in Health Centre staff's supplementary education.

c. Students of primary school

The NE contents for the students are the same as Table 17. Only 18% of the students said the study-lesson contents of education they received at school to be difficult, and almost all of them appeared to be interested in education contents of the exhibition of student work (88%) and in those of the fine-arts-contest (80%). However, the easy-delivery-methods for NE will have to be investigated and nutrition education activities based on the extra activities were judged to be desirable.

d. Contents of radio program

The contents about educational broadcasting are : 21 times about simple and fundamental nutrition and health, 95 times about nutrition and health, 125 times about food-choicing, 21 times about food-sanitation, 22 times about cooking-science. These were prepared and said by MFM/K staff. Because of the NE staff's manpower-shortage, it was considered that the contents of broadcasting manuscripts should be prepared with well-planned schedule, however, they had to be processed case by case in accordance with the broadcasting situation at that time. In the degree of understanding on educational broadcasting, 34.1% of housewives and 43.8% of CDF members said it to be neither easy nor difficult, and 23.4% of NE County's entire subject, said it easy, not showing any notable differences compared with 22.3% of Control County. At the same time, 68.1% of the housewives and 65.7%

of the CDF members showed interest at it, and among them the twenties-high school-graduate housewives and the high school-graduate CDF members showed high interest-degree.

Especially twenties-high school-graduate housewives and the forties-CDF members eagerly hoped for more listenings.

Therefore, NE broadcasting for these must be more powerfully stressed in future (see Appendix 19-1, 19-2).

3. REVIEW OF THE EDUCATIONAL AIDS AND MATERIALS

1) Developing Process of the Educational Aids and Materials

The educational aid and materials were developed by MFM/K staffs with the consideration of the actual circumstances of rural area's social, cultural, economical and life-structures and with reference to the other already publicated/current educational aids and materials (CARE, ORD edition etc.) and the foreign educational aids and materials. In developing the educational aids and materials, the point which deserves our attentions were simple contents, easy expression and use of pictures. And also, before the completion of developing course, the materials were evaluated by utilizers themselves several times and were revised and filled up. The existing domestic educational aids and materials being poor, and a question being raised about the utilities of the existing materials, 20 kinds of the educational aids and materials developed by MFM/K were worthy of notice considerably.

2) Contents of the Educational Aids and Materials

Developed NE aids and materials by MFM/K were as follows :

a. For use of social workers as NE guidance and delivery purposes

Text book on nutrition (Nutrition handbook for adults) (one kind)	10,000 copies	published in 1979	(see Photograph 1)
Slide(show) (one kind)	24 sets	manufactured in 1979	
Chart (one kind)	1 set	manufactured in 1979	
(three kinds)	15 sets, each	manufactured in 1979- 1980	

b. For the resident's use

Child-growth-chart (one kind)	15,000 pieces	manufactured in 1978	
Poster (two kinds)	9,000 pieces	manufactured in 1978- 1979	
Pamphlet (six kinds)	10,000 copies, each	manufactured in 1979- 1980	

3) Understanding and Interest on Educational Aids and Materials

a. The degree of understanding

a) By social workers

As shown in Appendix 20-1, most of social workers answered "The contents of the NE materials are neither



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Photo. 1. A picture of "Nutrition Handbook for adult" developed and published by MFM/Korea

good, nor bad", and its details are as followings. In case of social workers answered likewise as textbook 32.3%, slides 35.5%, flannel board 29.0%, pamphlets 32.3%, posters 58.1%, health-charts 35.5%. And who said "difficult" ranged from 3.2% (slide) to 19.4% (textbook) (see Appendix 20-2, 20-3). Therefore, it might say that most of them recorded high-understanding degree in the range of "very/a little easy to understand" or "normal" answering group.

b) By the residents (housewives and CDF members)

39.2%(pamphlet), 35.4%(poster), 34.5%(health-chart) of the housewives answered "neither easy nor difficult", so many of them said it to be not easy (see Appendix 20-2, 20-3). Accordingly, it was recommended that the more easier presentation, practical rather than theoretical contents will have to be prepared. For example, we can say it is more desirable to give emphasis on "balance diet" rather than on food-group by classifying as "five fundamental Food groups". On the other hand, in case of CDF members, 29.8% said the pamphlets to be "neither easy nor difficult", 29.8% "difficult", and "easy" 40.5%.

c) By the students

The students said the pamphlets (84.0%) and posters (76.0%) to be easy (see Appendix 20-4).

b. Degree of interest

a) By the social workers

As shown in Appendix 21-1, the rates of "very/a little interesting" answering by social worker are 54.9% (text-book), 67.7% (slide), 59.1% (flannel board), 48.4% (pamphlet), 45.2% (poster), 38.7% (health-chart). The slides recorded the highest-interest-degree, and the health-chart the lowest. Accordingly it is desirable to utilize effectively in accordance with each educational levels of subjects.

b) By the residents (housewives and CDF members)

75.0% (pamphlet), 72.6% (poster), 75.8% (health-chart) of the housewives answered "interesting", comparatively high-interest-degree, and they gave similiar "interesting" answer about three kinds of text-books. The CDF members too answered "interesting" about the pamphlets (72.6%) (see Appendix 21-2, 21-3).

c) By the students

The majority of the students answered "interesting" about the pamphlets (90%) and posters (94.0%) with high interest-degree (see Appendix 21-4). If it is judged to give a great effect on the interest and creative power of children, the students themselves were to be induced into making/utilizing of educational aids and materials during their fine arts-lessons or extra activity.

Considering the understanding/interest-degree about the educational aids and materials, it should be desirable to organize the special committee on the development and utilization of NE aids and materials for the cooperative development/production, exchange of materials and unification of the technical term.

4) Utilization of Application of Educational Aid and Materials

Utilization degree of educational aids and materials as it appeared in the appreciative reading of it, is the same as Appendix 22-1 and 22-2. In the readings of educational aids and materials, 73% (pamphlet), 71.7% (poster), 68.9% (health-chart) of the housewives said to have read the distributed-educational aids and materials "very much (appreciatively)" and 72.6% of CDF members said to have read appreciatively the pamphlet. Appreciative-Reading-degree of educational aids/materials was similiar to the interest-degree of them. On the other hand, the social worker pointed out that the textbook (48.4%), pamphlets (16.1%), poster (9.7%) as educational aids and materials were helpful for executing the role of delivery teacher, and among them, the textbook appeared to be a great help and utilized most effectively (see Appendix 23).

VII. EVALUATION-ANALYSIS ON THE KNOWLEDGE AND ATTITUDES TOWARD NUTRITION AND HEALTH

The knowledge and attitudes toward the nutrition and health of the peoples in NE County and Control County were evaluated and analyzed by the groups of housewives, CDF members and primary school children with the survey results of questionnaire and baseline data (see Table 20).

1. HOUSEWIVES AND CIVIL DEFENCE FORCES MEMBERS

1) High-Nutritive Staple Food

As it is shown in Table 20-1 and 20-2, the housewives correctly answered the "soybean-rice" (44% of total questioned subjects in NE County and 46% in Control County) to be "the most high-nutritive staple food". There was no significant differences between NE County and Control County, and in each age brackets (see Table 21-1). The housewives in both Counties answered that the "soybean-rice" (43% to 46%), "barley-rice" (40%) and "rice" (11%) were the most nutritive stable foods. It was noted that the greater parts (80%) of the high school graduated housewives pointed out the "soybean-rice" and "redbean-rice" as the most nutritive staple foods.

On the other hand, CDF members answered it with the following order of the "composite cereals" (39%), "soybean-rice" (31%), "barley-rice" (11%) and "rice" (9%) as the most

Table 20. Percentage distribution on the reaction of subject about nutrition knowledge and attitude

20-1. Residents (housewives and CDF members)

Question	Desirable answer	NE County		Control County
		House-wives	C D F members	
High-nutritive staple food	Bean-rice	44%	31%	46%
Weaning period	6-12 months	25	17	16
Washing method of rice	2-3 times slightly washing	88	72	88
Protein-rich food	Milk and Bean	75	76	64
Nutritive elements helpful for anemia	Iron	38	40	24
Primary factors selecting snack	Nutrition	60	81	36
Vulnerable group among family member toward nutrition and health	Children, pregnancy and lactating women	56	80	28
Discussion on nutrition with family member	-	-	64	-

20-2. Students

Question	Desirable answer	NE County	Control County
High nutritive staple food	Bean rice	40%	48%
Protein-rich food	Bean · Egg	64	28
Most abundant nutrient in dark green leaves	Vitamin and Mineral	58	70
Primary factors selecting snack	Nutrition	92	82
The accuracy of nutrition information	(Choose to wrong secence)	94	95
Meal-taking attitude	Balanced diet	64	26

Table 21. Percentage distribution of the type of high nutritive staple food
(Housewives)

Staple food	Total (250)	Age (Years)				Educational level				NE participants			County	
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	Partici- pation in NE training (178)	Receiv- ing NE prints (152)	Listen to NE radio program (117)	NE County (200)	Control County (50)
Rice	11.6%	7.5%	10.1%	15.3%	- %	12.6%	12.3%	- %	- %	11.8%	11.2%	12.4%	12.0%	10.0%
Barely-rice	39.6	41.8	37.7	38.7	66.7	42.0	36.8	20.0	66.7	37.6	39.5	40.1	39.0	42.0
Bean-rice	44.0	46.3	49.3	40.5	-	42.5	43.9	73.3	-	46.1	44.7	40.9	43.5	46.0
Radbean-rice	2.4	1.5	1.4	3.6	-	1.7	3.5	6.7	-	3.4	3.3	3.6	3.0	-
Noodle	0.8	1.5	-	0.9	-	0.6	1.8	-	-	0.6	0.7	0.7	0.5	2.0
Ramyon	-	-	.4	-	-	-	-	-	-	-	-	-	-	-
Suzabi	0.4	-	-	-	-	0.6	-	-	-	-	-	0.7	0.5	-
No answer	1.2	1.5	-	-	33.3	0.6	1.8	-	33.3	0.6	0.7	1.5	-	-

nutritive staple foods. Considering in each age brackets, the twenties of CDF members appeared to have the "soybean-rich" than "composit cereals".

2) Proper Washing Method of Rice

As shown in Table 22 and Appendix 25, 88% of the housewives answered that the desirable washing procedure of rice was "wash it slightly two or three times". There was no significant differences of washing method corresponding to that of each age brackets, educational level, NE or Control County and NE methodology. Therefore, it is considered that all housewives had a common knowledge on the rice washing method.

Table 22. Proper washing method of rice (Housewives)

Method	Total (250)	NE County (200)	Control County (50)
2,3 Times slightly washing	87.6%	87.5%	88.0%
Strongly washing	11.2	11.0	12.0
No answer	1.2	1.5	-

3) Weaning

Table 23 and Appendix 26-1 and 26-2 shows the age at which the infant ceases to have breast milk. 50% of the housewives wean their infants by 1 to 2 years, 23% by 6 months to 1 year, 14% by 2 years, and 12% by 4 to 6 months. In general, they expressed that they would like to give their breast milk to child for longer time (more than one year).

And there was no significant difference between NE County and Control County. As it is shown in Fig. 3, the greater parts of the housewives (72% in 1978 and 50% in 1980 of NE County) were saying the proper weaning to be one to two years. (9)

On the other hand, CDF members answered the proper weaning to be "1 year" (38%), "2 years" (27%), "6 months to 1 year" (17%) and 4 to 6 months (11%).

Table 23. Weaning period*

Age (month)	Total (250)	Housewives		CDF members (132)
		NE County (200)	Control County (50)	
4 - 6	11.6%	9.0%	22.0%	11.4%
6 - 12	23.2	25.0	16.0	17.4
12 - 24	50.0	49.0	54.0	37.9
25 and over	13.6	15.0	8.0	27.3
No answer	1.6	2.0	-	6.1

* Age at which child ceases to have milk from mother's breast

4) Protein-rich Foods

As shown in Table 24, Appendix 27-1 and 27-2, 72.4% of the housewives and 75.8% of the CDF members answered "protein-rich foods" to be milk and soybean. However, a part of the housewives (22.8%) and CDF members (19.7%) answered it to be fruits or vegetables. On the other hand, the housewives in NE County had more correct answer in

protein-rich foods that their counterparts in Control County and this should be regarded positively as the results of the NE in Wonseong County.

Table 24. Distribution of answer on protein-rich food

Food	Total (250)	Housewives		CDF members (132)
		NE County (200)	Control County (50)	
Milk and bean	72.4%	74.5%	64.0%	75.8%
Candy	0.8	1.0	-	-
Cider and Cola	0.8	1.0	-	1.5
Fruit and Vegetable	22.8	21.0	30.0	19.7
No answer	3.2	2.5	6.0	3.0

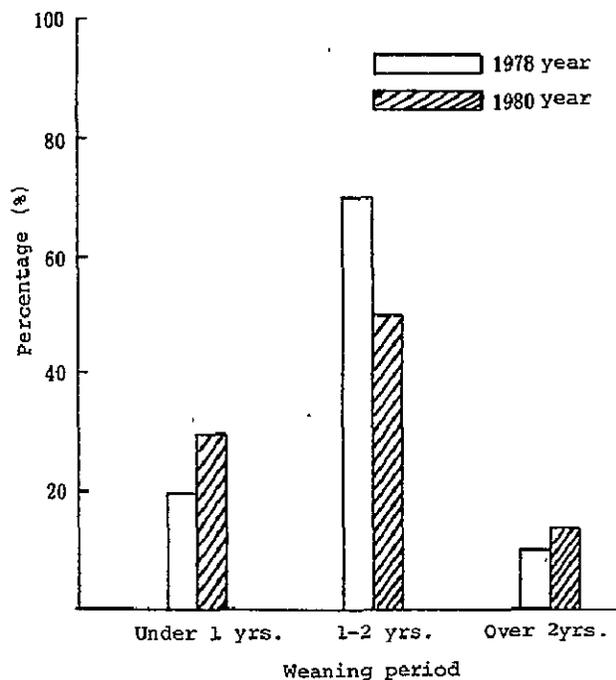


Fig. 2. Age at which child ceases to have milk from mother's breast (NE County)

5) Nutritive Elements Helpful for Anemia

As shown in Appendix 28-1 and 28-2, 35% of the housewives had a correct answer on the nutritive elements for anemia. The percentage of the correct answer in NE and Control counties was 38% and 24% respectively. Of the CDF members, 40% said iron is good for anemia. It was observed that younger and higher educated respondents had a more correct answer on it and the rate of correct answer was higher in case of NE with printed materials than in case of NE through lecture training or broadcasting.

6) Primary Factors Selecting Supplementary Foods for Children

Generally, a large number of housewives (85%) indicated that they give snacks to their children (see Appendix 29-1, 29-2) and housewives answered that "the primary factor for selection of children's snack" is "Nutritive value" (59.6%) and "taste" (26%). CDF members also answered "Nutritive value" (85%) and "taste" (7%) (see Fig. 3).

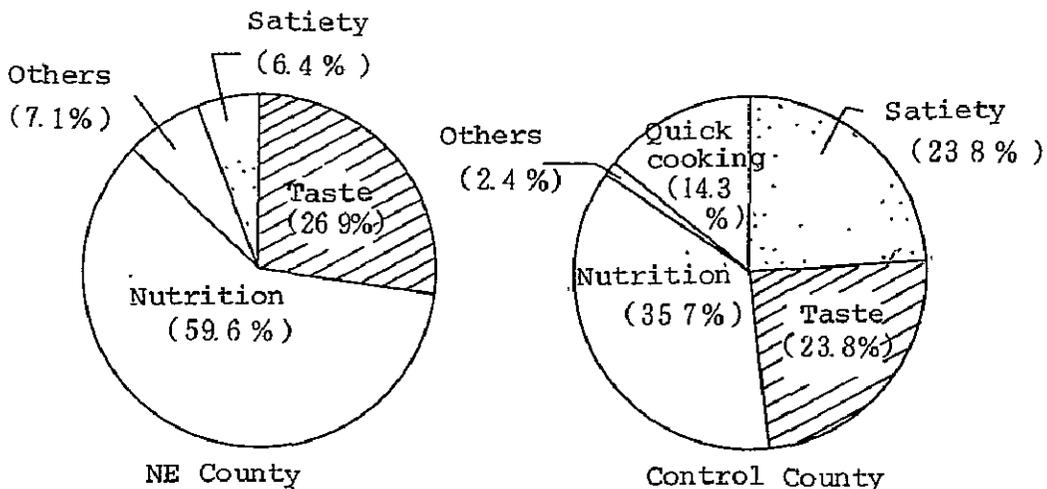


Fig. 3. Factors on the selecting snack for children (Housewives)

On the other hand, only 6% of the housewives in NE County (wherease 24% in Control County) said the primary factor it "easily satisfied from hunger". More emphasis on "nutritive value" was noted in the housewives of NE County (59.6% in NE County and 35.7% in Control County respectively). This tendency should be regarded positively as the results of the NE in Wonseong County.

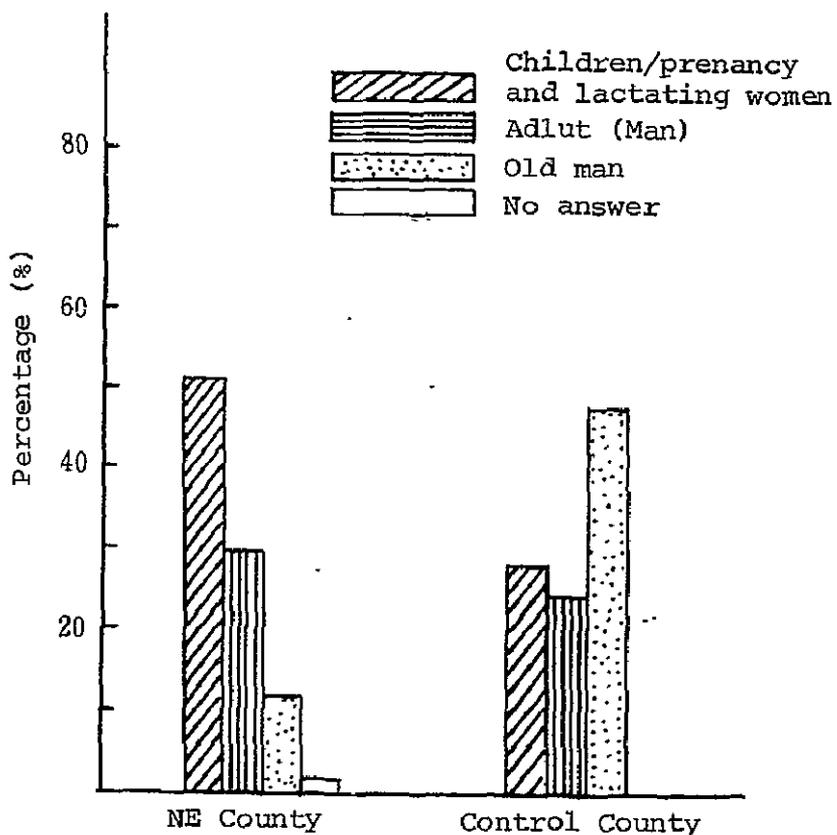


Fig. 4. Vulnerable group among family member toward nutrition and health(Housewives)

7) Vulnerable Group among Family Member toward
Nutrition and Health

The housewives answered "vulnerable group among family member toward nutrition and health" to be child/pregnancy/lactating women (50%), male adults (29%) and old man (20%) respectively, however, CDF members answered it to be child/pregnancy/lactating women (80%) as correct answer. Both the housewives and CDF members showed relatively high understanding and interest degree on the importance of vulnerable group toward nutrition. Percentage of correct answer for this in NE County and Control County was 56% and 28% respectively. This results indicated that NE in Wonseong County was desirable for the obtaining reasonable nutrition knowledges and attitudes by people.

8) Discussion on Nutrition with Family Member

64% of CDF members answered the question "after receiving nutrition education, have you ever discussed with your family member about nutrition or health?" as "yes, often", "yes, many times", and this shows considerably increased interest and positive attitude about nutrition (see Table 25).

Table 25. Discussion on nutrition with family member
(CDF members)

Discussion	Total (132)	Age (Years)				Educational level			
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (65)	No answer (13)
Very much	12.9%	20.0%	3.2%	12.9%	50.0%	3.3%	12.0%	15.6%	23.1%
A little	50.8	50.0	45.2	54.1	33.3	73.3	24.0	51.6	46.2
Little	25.0	30.0	29.0	23.5	16.7	16.7	60.0	14.1	30.8
Never	11.4	-	22.6	9.4	-	6.7	4.0	18.8	-

2. PRIMARY SCHOOL CHILDREN (STUDENTS)

1) High-Nutritive Staple Food

School children (students) answered the high-nutritive staple food to be "barley-rice" (44% total) and "soybean-rice" (37%). As shown in Table 26, the students in NE County had more correct answer on the high-nutritive staple food than their counterparts in Control County. Percentage of correct answer for this in NE County and Control County was 60% and 14% respectively.

Table 26. High-nutritive staple food (Students)

Food	Total (100)	NE County (50)	Control County (50)
Barely-rice	44.0%	40.0%	48.0%
Bean-rice	37.0	60.0	14.0
Rice	19.0	-	38.0

Table 27. Protein-rich food (Students)

Food	Total (100)	County		School year	
		NE County (50)	Control County (50)	5th year (25)	6th year (75)
Bean/Egg	46.0%	64.0%	28.0%	48.0%	45.3%
Potato/Cereal	8.0	8.0	48.0	12.0	33.3
Vegetable/Fruits	21.0	18.0	24.0	24.0	20.0
Sesame/Oil	5.0	10.0	-	16.0	1.0

2) Protein-rich Food

The students answered the protein-rich food to be beans/eggs (46%), potatoes/cereals (28%), vegetables/fruits (21%), sesame/oils (5%). Considering the rate of the beans/eggs-answer, 64% of NE County was much higher than 28% of control, thus showing that the effects of NE are remarkable (see Table 27).

3) Most Abundant Nutrient in Dark Green leaves

As it is shown in Table 28, 64% of the students answered the most abundant nutrient in dark green leaves are, to be "minerals and vitamin". 22% of them answered "protein", 9% answered "fat", and 5% answered "carbohydrate", Comparing two Counties, 58% of students answered "vitamin and minerals" in NE County, while 70% answered the same in Control County, thus rate of NE County being rather lower than that of Control County. But it was probable that this low rate may be owing to the fact that the nutrition

Table 28. Most abundant nutrients in dark green leaves (Students)

Nutrient	Total (100)	County		School year	
		NE County (50)	Control County (50)	5th year (25)	6th year (75)
Vitamin and Mineral	64.0%	58.0%	70.0%	44.0%	70.7%
Protein	2.0	22.0	22.0	28.0	20.0
Fat	9.0	14.0	4.0	16.0	6.7
Carbohydrate	5.0	6.0	4.0	12.0	2.7

informations about dark green leaves are treated in the fifth-grade natural-science textbook of primary-school. . . . Among each 100 students selected from each county, all of Control County's students were at sixth-grade-term, and, they all have already studied about this field, while half of NE County's student (50 persons) were at fifth grade-term, and couldn't have studies about it.

4) Primary Factors Selecting Snack Foods for Children and Meal-Taking Attitude

The most part (87%) of students answered "nutritive value" as the primary factors determining the contents of a snack, and students of NE County (92%) appeared to attach a little more importance to "nutritive value" than those of Control County (82%) (see Table 29).

Table 29. Primary factors selecting snack (Students)

Factors	Total(100)	NE County(50)	Control County(50)
Nutrition	87.0%	92.0%	82.0%
Taste	12.0	8.0	16.0
Don't know	1.0	-	2.0

On the other hand, attitude-change of students about nutrition and health, brought about attitude-change of meals taking, in result of which, compared with 64% of NE County students who said they took various kinds of meals evenly among all, only 26% of Control County said they did the same. And also the rate of students who said they had usually an unbalanced diet (eating only one or two kinds of tasteful

meals) was 14% in NE County, and 52% in Control County, this shows that effects of nutrition education have operated greatly (see Table 30).

Table 30. Meal-taking attitude (Students)

Attitude	Total (100)	NE County (50)	Control County (50)
Balanced diet	45.0%	64.0%	26.0%
One or two taste meal	33.0	14.0	52.0
As mother's suggestion	22.0	22.0	22.0

5) Accuracy of Nutrition Informations

To confirm whether the student's nutrition informations are accurate or not, we had them select one error item among several items, the result of which (95% selected right answer) showed that their informations are accurated, and there was no significant difference between two Counties (see Appendix 32).

VIII. ANALYSIS-EVALUATION ON THE CHANGE IN DIETARY LIFE AND BEHAVIOR TOWARD NUTRITION AND HEALTH

The results of analysis and evaluation on the improvement in dietary behavior and dietary life of housewives, CDF members and students are as follows.

1. INTAKE OF PROTEIN FOODS (SOYBEAN FOODS)

As shown in Table 31, 76% of the housewives answered that "they produce and prepare sometimes protein foods such as soybean sprouts and soybean soup". More educated housewives answered that they sometimes buy such protein foods at groceries. However, there is no indication of differences in preference of protein foods among the different age groups and income groups.

Table 31. The behavior on the intake of protein food (soybean sprout and soybean soup) (Housewives)

Method	Total (250)	Age (Years)				Educational level				County	
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	NE County (200)	Control County (50)
Produce and prepare sometimes	76.4%	68.7%	73.9%	82.5%	66.7%	81.7%	70.2%	40.0%	66.7%	75.5%	80.0%
Purchase and take it	19.2	25.4	21.7	16.2	-	12.6	29.8	60.0	-	22.5	6.0
Little intake	4.4	6.0	4.3	4.3	33.3	5.7	-	-	33.3	2.5	14.0

It was noteworthy that 98% of the housewives in NE County answered that "they produce or buy the protein foods", meaning that they are more positive in preparing the protein foods than their counterparts in Control County.

2. FOOD PREPARATION AND STORAGE

The survey showed that 78% of the housewives preserved foods as bottling or as dehydrate foods, and 38% of them used the traditional method.

There is no difference in the preparation and preservation of foods among the different age, educational level and income groups (see Appeneix 33 and 34). The housewives in NE County showed more positive attitude for the preparation and preservation of foods than their counterparts in Control County.

3. SNACK FOR CHILDREN

Relatively high income group provided more snacks for their children. About 71% of the housewives replied that they give "bread" as snacks for their children, and 31% of them said that they sometimes buy cookies at shops for their children. Most of CDF members said that "bread" is major snacks for their Children.

As shown in Table 32, Appendix 35-1, 35-2, 36-1 and 36-2 most housewives said that they prepare themselves bread or fried cake for their children and sometimes buy bread,

cookies, milk and yoghurt at shops for snacks for their children.

Table 32. The kinds of snack for the children

32-1. Housewives

Home made		Processed food	
Bread	(71%)	Cake	(31%)
Buchim	(27)	Yoghurt	(26)
Fry	(17)	Bread	(25)
Dought	(13)	Woorang-A	(25)
Korean-bread	(10)	Milk	(14)
Egg	(7)	Candy, Fruits	(11)

* By mult-reply

32-2. CDF members

Home made		Processed food	
Bread	(49%)	Bread	(18%)
Egg	(7)	Milk	(16)
Fry	(7)	Cake	(14)
Buchim	(6)	Fruits	(10)
Candy	(6)	Yoghurt	(8)
Fruits	(4)	Candy	(4)

* By multi-reply

In particular, protein foods such as "Wooryang-A" (HNLC foods), "milk", and "ice cream" were available in NE County than in Control County.

About 46% of the housewives in NE County said that "they buy themselves the snack they chosen for their children", while 55% of the CDF members said that "they give money to their children with an instruction to buy specific food for their snack".

Therefore, housewives have a great influence on the choosing of snack for their children. There was no great difference in the housewives' influence between NE County and Control County (see Appendix 37-1, 37-2).

Table 33. The kinds of snack for students

NE County		Control County	
Woorang-A	(50%)	Sweet potato	(66%)
Bread	(26)	Corn	(60)
Cake	(10)	Potato	(52)
Fruits	(8)	Fruits	(44)
Egg	(8)	Bread	(42)
Sweet potato	(6)	Fry	(12)
Milk	(4)	Milk	(10)

* By multi-reply

Most students in NE County could afford to eat high-nutritive snacks of "Woorang-A, and bread", whereas their counterparts in Control County were able to eat starch food such as sweet potato, yellow corn and white potatoes. It means that NE and local production of high nutritive foods such as Woorang-A will contribute to the improvement of dietary life in the rural areas of NE County.

4. MEMU CHANGE FOR BALANCED DIET

About 47% of the CDF members said that their regular menu has been improved after the nutrition education was carried out, while 53% of them made a negative answer. The positive improvement in the menu was 18% in vegetable dish, 13% in composite cereal food, 10% in protein food, 11% in nutritive food and 8% in diversified foods.

The improvement (47% of total in NE County said to be improved) should be regarded positively as the results of the nutrition education in the rural communities (see Table 34-1, 34-2).

Table 34-1. Improvement in regular menu (CDF members)

Improvement	Total (132)	Age (Years)				Educational level			
		20-29 (10)	30-39 (31)	40-49 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (64)	No answer (13)
Yes	47.0%	50.0%	32.3%	51.8%	50.0%	60.0%	28.0%	50.0%	38.5%
No	53.0	50.0	67.7	48.2	50.0	40.0	72.0	50.0	61.5

Table 34-2. Contents of improved menu

Improved menu	Total (N=62)
No answer	45.2%
Mixed diet	12.9
Increase of vegetables	17.7
Increase of protein	9.7
More nutritive	11.3
Various menu	8.1
Others	6.5

On the other hand, kinds of side dishes for lunch box of the students are as shown in Table 35. Most students in NE and Control Counties ate side dishes made up of anchovy, kimchi and soybean boiled in bean sauce. However, students in NE County ate more anchovy than their counterparts in Control County as the result of the nutrition education on the anchovy which contains high amounts of protein and minerals.

Table 35. Side-dish of lunch box for students

NE County		Control County	
Anchovy	(68%)	Kimchi	(82%)
Kimchi	(48)	Anchovy	(68)
Bean products	(36)	Bean products	(44)
Egg	(10)	Jangachee	(32)
Vegetable	(6)	Mountain herbs	(30)
Bean sprouts	(4)	O-deang	(30)

* By multi-reply

5. SANITARY PRECAUTION IN DIETARY LIFE

As for sanitary precaution in dietary life, 81% of the housewives and 72% of the CDF members said that they wash hands before eating meals. By age group, the 20-age bracket was more sanitary sensitive. More (82%) people has taken sanitary precaution in NE County than in Control County (see Appendix 38-1, 38-2).

Persons with relatively high educational background used boiled water to drink. About 12% of the people in NE County used boiled water to drink while 44% in Control County used boiled water. The difference is attributable to the improved hygienic water supply system (31.8%) in NE County in contrast with the water supply system (23.1%) in Control County (see Appendix 39-1, 39-2).

6. PRODUCTION OF NUTRITIVE FOODS

Appendix 40 shows the increased production by housewives of some of the 70 nutritive agricultural products. The data is based on the questionnaire for 250 housewives including those who received the NE and education aids (training, printed materials and educational broadcast programs) and those who did not receive such educational program.

The housewives, who received the NE, increased by 1.5%-10.4% the production of nutritive agricultural products such as dark green leaves vegetables and oil seed plants. The increase is calculated based on the proportion of acreage of the nutritive plants and vegetables to the total arable land.

Protein products such as soybean, red bean and eggs were increased by 1.5% to 5.9%, leaves of sesame plants, of red pepper plants, carrot, leeks, crown daisy and lettuce by 1.5% to 7.5%, and oil-seeds such as sesame and perilla by 2.0% to 10.4%, respectively.

Housewives who did not receive the nutrition education have not made any efforts to increase the production of such nutritive agricultural products.

IX. ANALYSIS-EVALUATION ON THE CHANGE IN NUTRITION STATUS

1. KINDS OF DIETARY FOODS

As shown in Table 36, people in NE County ate 101 kinds of foods in 1976 before the NE embarked on, 128 kinds of food stuffs in 1978 when the education was launched, and 162 kinds of foods in 1980, the target year of the nutrition education.

By kinds of foods, oil foodstuffs increased from one kind to five kinds, from 45 kinds to 53 kinds of vegetables and fruits, from 20 kinds to 30 kinds of fish and shellfish, from 10 kinds to 13 kinds of dairy products, and from 7 kinds to 18 kinds of seasoning during 1978-1980.

Table 36. Kinds of food intake (NE County)

Food groups	Year		
	1976*	1978*	1980
Cereals and grain products	18 kinds	25 kinds	23 kinds
Legumes product	7	9	9
Oil and fats	3	1	5
Vegetable/Fruits	38	45	53
Fish and shell	15	20	30
Milk and milk products	5	10	13
Seasoning	8	7	18
Other	7	11	11
Total	101 kinds	128 kinds	162 kinds

* see reference 7 and 35

The remarkable increase in the intake of vegetables, fruits, seasonings, fishes and dairy products may be attributable to the progress of food supply system, by the increased income of the people, mass production of processed food as well as by the enlightenment NE program carried out in the rural communities of Wonseong area.

2. FOODS CONSUMPTION

1) Average Food Intake Per Person

The per capital daily average intake of foods in NE County increased from 894g in 1978 to 970g in 1980 (see Table 37). The daily average intake of cereals and cereal products decreased from 424g in 1978 to 412g in 1980, which is attributable to the decreased consumption of rice in particular. The intake of fresh vegetables increased from 174g to 212g and processed foods from 59g to 96g. The intake of fruits declined due to the poor harvest of fruits. There was no great change in the intake of sweet and white potatoes and soybean.

On animal foods, the intake of meat increased from 13g to 22g, of eggs from 4g to 11g, of fishes from 9g to 18g, and of milk from 1g to 7g.

Meanwhile, in 1980 the per capital daily average intake of foods in NE County amounted to 970g in contrast with 833g in Control County. There was a remarkable increase in the intake of potatoes and sweet potatoes, cereals, vegetables and fruits among the people prompted by the general improvement of dietary life as well as the enlightenment program carried out by the NE.

Table 37. Average daily per capita consumption of food groups

Food groups	NE County		Control County (1980/30 Household)
	1978 (160 Household)	1980 (159 Household)	
VEGATABLES	851g	906g	755g
Cereals and grain products	424	412	382
. Rice	337	320	310
. Barley	31	43	28
. Wheat flour	49	47	44
. Corn	6	1	0
. Sorghum	1	0	0
. Burk wheat	0	1	0
Sugars, Syrup	0	2	2
Legumes and its products	18	18	17
Potatoes	106	105	72
Vegetables	233	308	239
Fruits	41	30	12
Sea-weeds	2	1	5
Others	27	30	26
ANIMALS	33	64	78
Meat	13	22	21
Eggs	4	11	11
Fish and Shell	15	24	37
Milk and it's products	1	7	9
Oil and Fats	4	7	8
Others	6	2	2
Total	894g	970g	833g

2) Average Food Intake by Pre-school Children and Pregnant/Lactating women

The daily average intake of foods per pre-school child (4-6 years old) and pregnant and lactating women revealed by the 24 hour-recall survey is as shown in Table 38.

Table 38. Average daily per capita consumption of food (pre-school children, pregnancy and lactating women) (24hr-recall survey/1980)

Food groups	Pre-school children (4-6 year olds)		Pregnancy, lactating- women	
	NE County (49)	Control County (13)	NE County (24)	Control County (6)
VEGETABLES	594.9g	382.5g	1075.6g	696.7g
Cereals and grain products	396.1	310.1	692.2	538.6
Legumes and its products	38.7	38.3	79.9	41.7
Vegetables and fruits	101.8	23.0	269.8	114.3
Seasoning and others	48.3	11.1	33.7	2.1
ANIMALS	166.3	96.1	286.6	211.5
Meat eggs and milk	121.1	50.0	209.5	135.0
Fish and its products	40.1	43.1	69.6	68.8
Oil and fat	5.1	3.0	7.5	7.7
Total	761.2g	478.6g	1362.2g	908.2g

The per capita daily average intake of foods by the pre-school children in NE County amounted to 761.2g in contrast with only 478.6g in Control County. By the food groups, 396.1g of cereals in NE County against 310.1g in Control County,

101.8g of vegetables and fruits against 23.0g, 121.1g of dairy products against 50g, respectively.

Meanwhile, the per capita daily average intake of foods by pregnant and lactating women amounted to 1,362.2g in NE County in contrast with 908.2g in Control County. By kinds of foods 79.9g of soybean in NE County against 41.7g in Control County, 269.8g of vegetables and fruits versus 114.3g and 209.5g of dairy products versus 135.0g.

As shown above, the per capita daily average intake of foods by pre-school children and pregnant and lactating women was greater in NE County than Control County.

3. NUTRIENT INTAKE

1) Average Nutrient Intake Per Person

The per capita daily average intake of nutrients by the people in NE County and Control County is as shown in Table 39.

The per capita daily average intake of calories in NE County increased slightly from 1,810 kcal in 1978 to 1,834 kcal in 1980. However, the total intake of protein increased from 52.5g in 1978 to 57g in 1980, with the intake of animal protein increasing from 7.7g to 10g during the same period. The intake of fat increased by 40% from 14.2g to 20g and of calcium by 10% from 332.3mg to 375mg during 1978-1980, with the intake of iron remaining unchanged.

In the intake of vitamins, vitamin A increased from 3,628 I.U. to 4,020 I.U., B₁ increased by 15% from 1.13mg to 1.30mg, and B₂ increased by 40% from 0.83mg to 1.17mg during

the same period. The intake of vitamin C remained unchanged (the loss of the element in the course of cooking was taken into consideration for 1980), and that of niacin was decreased.

Table 39. Average daily per capita intake of nutrients

Nutrients	NE County		Control County
	1978	1980	1980
Calory (kcal)	1,810	1,834	1,704
Protein (g)	52.5	57	54
. Animal protein	7.7	10	12
Fat (g)	14.2	20	19
Minerals			
. Calcium (mg)	332.3	375	358
. Iron (mg)	13.5	12	12
Vitamin			
. A (I.U)	3,628	4,020	3,641
. B ₁ (mg)	1.13	1.30	1.05
. B ₂ (mg)	0.83	1.17	1.02
. C (mg)	67.7	49	44
Niacin (mg)	18.8	14	11

The survey shows that the intake of total calories, protein, calcium and vitamin B₂ has greatly increased in 1980 compared with the survey conducted in 1978. (35)

As stated above, the per capita daily average intake of calories in NE County amounted to 1,834 kcal in 1980 compared to 1,704 kcal in Control County (1980)..

The intake of total protein in NE County averaged 57g against 54g in Control County, 10g of animal protein against 12g, representing a small difference in the amount of intakes between the two counties.

However, the people in NE County were taking in more vitamin A (+379 I.U.), B₁ (+0.25mg), B₂ (+0.15mg) and niacin (+3mg) than the people in Control County. There is no great difference in the intake of fat and iron between the two counties.

The increased intake of nutritive elements in NE County is attributable to the existing Model nutrition project, including the production and supply of "Wooryang-A", in the county in the past few years, as well as the nutrition education carried out successfully since 1978 in the rural communities of NE area.

2) Average Nutrient Intake by the Pre-school Children and Pregnant/Lactating women

The per capita daily average intake of nutritive elements by the pre-school children (4-6 years old) and pregnant and lactating women in NE County and Control County is as shown in Table 40.

a. Pre-school children (4-6 years old)

As shown in Table 40, the intake of calories by the pre-school children in NE County averaged 1,325 kcal compared to 1,065 kcal in Control County. The intake of calories in the two counties was far less than the recommended allowance amounting to 1,700 kcal.

Table 40. Average daily nutrient intake of pre-school children, pregnancy, lactating women (1980/24hr-recall survey)

Nutrients	Pre-school children (4-6 years old)			Pregnancy, Lactating women		
	County RDA*	NE County (49)	Control County (13)	County RDA*	NE County (24)	Control County (6)
Calory (kcal)	1,700	1,325	1,065	2,550-2,800	2,876	2,691
Protein (g)	50	44.2	34.5	95-100	91.8	91.4
Fat (g)	-	14.4	7.4	-	29.4	26.5
Mineral						
• Calcium(mg)	600	353.1	200.4	1,000	817.5	1280.2
• Iron (mg)	10	8.6	6.4	30-60	30.6	31.2
Vitamin						
• A (mg)	1,400	2,806	1,309	2,000-3,500	8,765	3,838
• B ₁ (mg)	0.7	0.75	0.49	1.1-1.3	1.52	2.03
• B ₂ (mg)	1.0	0.87	0.42	1.3-1.6	1.58	1.59
• C (mg)	40	37.3	10.4	65-85	76.7	6.27
• Niacin (mg)	11	16.4	7.1	14-17	22.0	28.8

* See reference 25

The average intake of protein amounted to 44.2g in NE County in contrast with 34.5g in Control County, which was far below the recommended allowance of 50g daily.(25)

The intake of fat amounted to 14.8g in NE County, which was almost double the 7.4g intake in Control County.

The daily intake of calcium amounted to 353.1mg in NE County against 200.4mg in Control County, and 8.6mg of iron versus 6.4mg, respectively, in the two counties. The intake

was also far below the recommended allowance of calcium and iron.

The people in NE County were taking in more vitamins than the people in Control County, particularly in vitamin A (+1,497 kcal), B₂ (+0.45mg), C (+26.9mg), and niacin (+9.3mg). However, the intake of B₂ and C was far less than the recommended allowance of them.

As shown above, the children in NE County have an increased intake of nutritive elements than their counterparts in Control County. However, the intake has been far below the recommended allowance of calories, protein, calcium, iron, vitamins and niacin.

b. Pregnant and lactating women

As shown in Table 40, the per capita daily average intake of calories amounted to 2,876 kcal in NE County and 2,691 kcal in Control County. The calorie intake in NE County meets the recommended allowance.

The intake of protein in both NE and Control Counties averaged 91g, representing a slight shortfall of the recommended allowance.

Meanwhile, NE County was behind Control County, in the intake of calcium with 817.5mg against 1,280mg as well as of iron with 30.6mg against 31.2mg, respectively. The intakes were also less than the recommended amount of intake.

The intake of vitamin A in NE County averaged 8,765 I.U. against 3,838 I.U. in Control County, 1.52mg of B₁ against 2.03mg, 1.58mg of B₂ against 1.59mg, 76.7mg of C against 62.1mg, and 22.0mg of niacin versus 28.8mg, respectively. The intakes

of those elements were within the recommended allowance.

There was no great difference in the intake of nutritive elements by the pregnant and lactating woman mothers in the two counties. However, the intake of protein, calcium and iron fell short of the recommended allowance.

X. ANALYSIS-EVALUATION ON THE CHANGE IN ANTHROPOMETRY AND CLINICAL STATUS

1. ANTHROPOMETRY OF PRESCHOOL CHILDREN
(1-3 years old)

Anthropometric data of pre-school children (3-year-old group) in NE County in 1978 and 1980 and in Control County in 1980, respectively, is as shown in Table 41.

Table 41. Anthropometric measurement of pre-school children (3 years old)

Age	Sex	Subject*	Number (person)	Weight (kg)	Height (cm)	Arm circumference (cm)	Skinfold thickness	
							L-up Arm (mm)	Back (mm)
3 Years old	Boy	A (1978)	22	12.4±1.5	88.9±5.0	15.5±0.8	9.5±2.6	6.0±2.1
		(1980)	18	13.0±1.7	90.0±4.6	15.6±0.9	11.0±3.7	7.3±2.3
		B (1980)	5	13.6±2.0	87.9±3.5	15.5±0.3	12.0±4.2	9.0±1.8
		S	-	13.3±1.6	91.9±5.5	-	-	-
	Girl	A (1978)	17	12.4±1.3	90.3±5.7	15.1±1.1	9.5±2.9	6.7±2.7
		(1980)	18	12.7±1.7	90.0±6.1	15.4±1.0	9.0±3.7	7.1±2.1
		B (1980)	4	14.5±1.3	93.3±6.0	15.9±1.6	12.3±3.2	8.8±2.5
		S	-	12.8±1.7	90.2±5.8	-	-	-

* A : NE County (A)
B : Control County (B)
S : Korean Standard (S)

The average weight of boy children in NE County increased from 12.4kg in 1978 to 13.0kg in 1980, and the average height went up from 88.9cm in 1978 to 90cm in 1980. There was no difference compared with those in Control County. However, the average weight and height were below the Korean physical standard for children. (25) The arm circumference of the children averaged 15.5cm both in NE County and Control County.

Meanwhile, the weight of girl children in NE County increased from 12.4kg in 1978 to 12.7kg in 1980, and the average height of them remained unchanged at 90cm during the same period. The average weight and height reached the Korean physical standard set for the children. The average arm circumference and skinfold thickness remained unchanged during 1978-1980.

The pre-school children in Control County have slightly more weight and height than their counterparts in NE County.

2. ANEMIA AND CLINICAL SIGNS

1) Frequency of Anemia

Table 42 shows the hemoglobin content and frequency of anemia suffered by the pre-school children (4-6 age group) and pregnant and lactating women in NE and Control Counties.

The hemoglobin content of pre-school children in NE County averaged 11.82% against 10.31% in Control County, while the frequency of anemia was only 26.1% in NE County in contrast with 73.3% in Control County. The frequency of

anemia in NE County in 1980 shows a drastic decrease from 1978.

Table 42. Hemoglobin levels and anemia in vulnerable group

Area	Subject (Age)	Number (person)	Average (%)	Percentage of subject by Hb level				Proportion of anemia	
				≤10.0 (%)	10.0-10.9 (%)	11.0-11.9 (%)	12.0≤ (%)	Number (person)	Percentage
NE County	Pre-school children (4 - 6)	142	11.82	14	23	43	62	37	26.1
	Pregnancy, Lactating women	141	12.06	16	15	29	81	31	21.9
Control County	Pre-school children (4 - 6)	30	10.31	12	10	6	2	22	73.3
	Pregnancy, Lactating women	28	11.03	3	8	12	4	12	42.9

The frequency of anemia suffered by the children is considerable, and this would coincide with the results of the insufficient intake of iron by the children (Table 40).

Meanwhile, the hemoglobin content of pregnant and lactating women in NE County averaged 12.06% against 11.3% in Control County, with the frequency of anemia averaging 21.9% against 42.9% respectively.

2) Clinical Signs

Table 43 shows the result of the survey of the clinical symptoms of pre-school children in NE County and

Control County.

There was no clinical symptoms such as thyroid-enlarged, eyes-bitots spot, skin-hyperkeratosis, bilateral peddaloedem, urin-protein positive in both counties.

However, there was 6.9% of nasolabial sebrria in NE County against 26.7% in Control County, 7.6%, of cheilosis against 13.3%, 0.6% of Gum swollen versus 0.1%, and 5.1% of dental caries against 6.7%, respectively.

There is a little difference in the clinical symptoms in both counties. However, there was a general symptoms of insufficient intake of vitamin B₂ in the two counties.

Table 43. The clinical sign found in children

Clinical sign	NE County		Control County	
	Number (person)	Percentage (%)	Number (person)	Percentage (%)
Eyes-bitots spot	0	0	0	0
Nasolabial sebrria	11	6.9	8	26.7
Cheilosis	9	5.7	1	3.3
Gum swollen	1	0.6	0	0
Angular lesurdor skar	12	7.6	4	13.3
Tongue-enlarged	2	1.2	0	0
Thyroid-enlarged	0	0	0	0
Skin-hyperkeratosis	0	0	0	0
Bilateral peddaloedem	0	0	0	0
Urine-protein positive	0	0	0	0
Dental caries	8	5.1	2	6.7

3. INTESTINAL PARASITES INFECTION AMONG CHILDREN

Table 44 shows the parasite infections among children in NE and Control Counties.

There was roundworms of 16.1% of the children in NE County against 7.1% in Control County. However, there was no infection of other parasites such as trichuria and hookworms.

The parasite infection in 1980 shows a drastic decrease compared with the survey conducted in 1978.

Table 44. The parasites found in children (1980)

Parasite	NE County		Control County	
	Number of infected person	Percentage (%)	Number of infected person	Percentage (%)
Roundworms	25	16.1	2	7.1
Hookworm	0	0	0	0
Teniasis	2	1.3	0	0
Trichuria trichris	0	0	0	0

XI. OVERALL DISCUSSION AND CONCLUSION

1. METHODOLOGY AND APPROACH FOR ANALYSIS AND EVALUATION

Evaluation is a term which is virtually synonymous with any process of arriving at a considered judgement and is feedback procedures for monitoring and improving consciously controlled systems.

In general, an evaluation of nutrition education (NE) is necessary to review the performance and accomplishments of the nutrition education as a part of education activity. The NE shall be evaluated in terms of its results and effectiveness of its activities while the quantitative and qualitative impact on the people in terms of their response and change in their attitude, behaviour and nutrition/health status shall be analyzed. (4,22,36)

Commenting on the Applied Nutrition Program (ANP) carried out in Korea, it was pointed out that an appropriate analysis of the effectiveness of the activities analysis shall be made in the light that 1) have the people learn something?, 2) have they applied it?, and 3) does it work? And it was also said the evaluation of the program shall be made in the light that 1) any differences between ANP and control villages must represent a minimum evaluation of the effect of the program, on the other hand, 2) comparisons made between before and after the ANP represent a maximum evaluation in view of the overall improvement in the country. (18)

The above method of approach is reasonable and appropriate for an analysis and evaluation of the ANP. Meanwhile, there

was a typical model of knowledge, attitudes, behaviour, improvement in nutrition status (KABIN) for the evaluation of the nutrition education. The model is presented in Figure 5. (33) This model is considered as a systematic approach of evaluation on the results of nutrition education.

We used the above two methods of approaches with the modification in the analysis and evaluation of Wonseong County Model Nutrition Education Project.

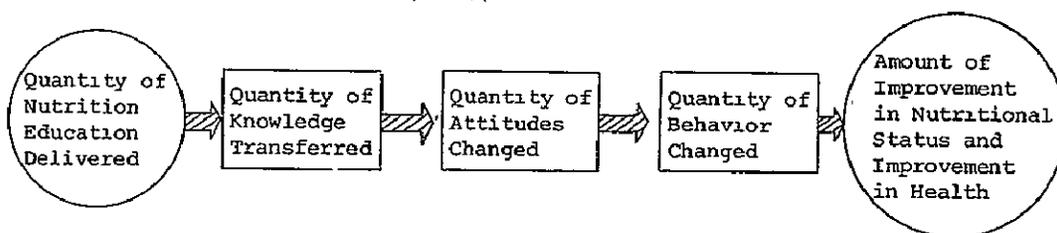


Fig. 5. KABINS model for evaluating nutrition education

Based on the KABIN model, the base line data on the change before and after the NE project which was carried out and the difference between the NE County and Control County were analyzed. The combined and modified method of approach is considered as the most reasonable and appropriate to analyze and evaluate the nutrition education program which conducted in the rapidly changing communities economically and socially such as in Korea.

The analysis and evaluation of Wonseong County Model NE project based on the modified approach will be itemized as follows :

1) General status of Wonseong County/outline of Model NE Project/analysis and review of the contents of NE activities.

2) Analysis-evaluation of a change in knowledge and attitude.

3) Analysis-evaluation of a change in behaviour and in dietary life.

4) Analysis-evaluation of food intake and nutrition status.

5) Analysis-evaluation of an improvement in anthropometry and clinical status.

2. SIGNIFICANCE AND EDUCATION ACTIVITIES OF WONSEONG COUNTY MODEL NUTRITION EDUCATION PROJECT

Considerable efforts have been made for the increased agricultural production as well as the improvement of primary health and dietary life of the people in rural communities by the nationwide agricultural guidance program and public health projects during the past decades in Korea. While the nation's agricultural production has increased remarkably, there are still great problems to be solved for the improvement of primary health and dietary life of the rural people. (15,31)

The improvement in the intake of nutritive foods by rural people can be achieved not only by the development of production and marketing of nutritive foods and the increased purchasing power of the people but also by an intensive and continued nutrition education carried out for the rural

people. (17) The intensive education has enlightened housewives on the knowledge of nutrition, resulting in improvement of physical status of children in terms of an increased weight and increased arm-circumference, with more intake of protein, vitamin B₁ and B₂. (15)

Wonseong County is located in rugged area of mountainous Kangwon Province, and the people, who engage mostly in agricultural production, has poor nutrition and physical status compared with the nation average due to the insufficient intake of protein, calories, calcium, iron and vitamin B₁ and B₂. (7.35) At present some nutrition programs had been carried out in Wonseong County in order to improve the intake of nutritive foods.

Recently, the importance of nutritive improvement has been called for not only in rural communities but also nationwide level. Therefore, it was timely and appropriate to develop Wonseong County Model Nutrition Education Project intensively in the rural communities during 1978-1980. (28-30,32)

Wonseong County Model Nutrition Education Project was carried out by one supervisor and two NE trainer from Meals for Millions Foundation(MFM)/Korea, who were supported by about 90 officials of the Wonseong County and social workers.

The 3 professional staff workers of MFM/Korea trained the social workers, volunteer community leaders and villagers on the nutrition, food and health. The social workers in turn enlightened the people on the nutrition education. They are expected to be trained intensively to carry out the enlightenment program for the grassroots people. Primary school students have been enlightened on the nutrition improvement by teachers in their schools while the people were enlightened by Health Center workers and volunteer

community leaders.

Social workers such as Health Center workers and extension officer of Rural Guidance Office are expected to engage actively in the nutrition education program of the people and the agricultural volunteer community leaders are devoted to the increased production of agricultural products. However, it should be pointed out that only 69% of the social workers have pride in their work despite the fact that 81% of them feel that they are doing worthy and important services for the people. Therefore, appropriate measures should be taken to encourage the social workers in their services for the people. The Model Nutrition Education Project, which was carried out by MFM/Korea, has enlightened not only the people but also the government officials to engage actively in the improvement of dietary life and nutrition of the people in the communities.

The project also has contributed greatly to the continued enlightenment of the people by organizing the autonomous Nutrition Improvement Clubs in the rural communities of Wonseong County. The clubs have served as efficient educational channel for the nutrition improvement of the people as shown in Figure 6. The autonomous clubs have encouraged the people to take part actively in the improvement of their dietary life and nutrition by mutual help and cooperative efforts in the communities. However, continued efforts should be made to promote the activities of the clubs to prevent them from falling into "idle" clubs.

To carry out successfully the nutrition education programs, it was important to select appropriately the target people of education, time of education, educational aids, and method and content of education. Rural communities are busy

during the farming season. In this connection, 33% of the social workers pointed out that there were problems in the time of education and the target people for education. Therefore, a close cooperation should be made between the educational planners (supervisor), NE trainers, social workers and the people for the efficient implementation of the educational programs.

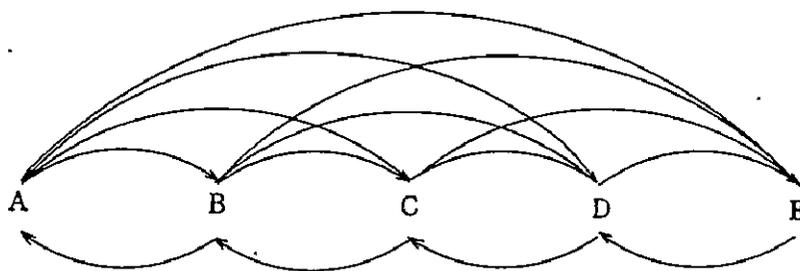


Fig. 6. Chain of linkage for education delivery
 (A ; Social workers or NIC leader)
 (B,C,D,E; NIC member or villager)

The education program extended to male adults such as community leaders, members of Homeland Reserve Force and Civil Defense Force, in addition to housewives and children, have contributed to the accelerated improvement of the nutrition status because they have a great influence in their homes and social fields. Therefore, it is desirable to continue such educational program for them.

On the method of education, the social workers showed preference in practical training (48%) and free discussions (39%), respectively, and other in seminars and lectures (Table 16). Meanwhile, 22-26% of the people said that the content of the education was difficult to understand.

The survey showed that a relatively large number of graduates (20-30 age group) of middle and high schools listened to the nutrition educational radio programs while a relatively high percentage of the primary school graduates (40-age group) received the printed matters on nutrition and attended the educational training programs. The above facts will serve as a good guideline for the formulation and implementation of nutrition programs in rural communities in the future.

It is noteworthy that the staff of Model Nutrition Education Project has developed and produced some 20 educational aids and materials for the successful implementation of the educational programs. A considerable time was devoted to the development of the educational aids, and still there are a room to modify in the educational aids. Some 42-73% of the people commented that the educational aids had a "fresh and interesting content" and 39-76% of the people showed an interest in the educational aids, with 79-91% of them expressing their desire to receive the educational aids.

Accordingly the educational aids must be developed continuously to include 1) simple and interesting knowledge, 2) practical knowledge and 3) easy explanation to enhance the understanding of the content. And also such educational aids and materials must be distributed and used efficiently to the people for the maximum utilization of educational program. As Fig. 7 shows, the educational aids and materials had served as one of the important educational media.

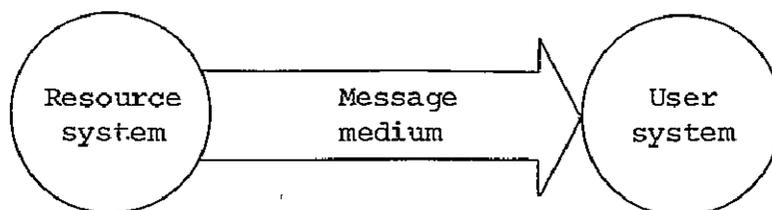


Fig. 7. Dissemination and utilization of knowledge through message medium

3. CHANGE IN KNOWLEDGE, ATTITUDE AND DIETARY LIFE/BEHAVIOR

The effect of the nutrition education is diversified ranging from an accurate transfer of knowledge to the people to the transmission of distorted and misunderstood knowledge and to the total negligence on the part of the people. The knowledge transference/Utilization tends to show the importance of the existence of social interaction between many individuals. An individual will be in touch not only with one other person, but with many others, by who the knowledge can be transferred to the user as Figure 8. Therefore, a continuous and steady education is necessary to make the nutrition education effective for the people. Only a considerable effort should be made to influence the knowledge, attitude, behavior and the improvement in nutrition status as called for by the KABIN model.

The effectiveness of the nutrition education will be strengthened not by only method and approach but by various methods and approaches. Therefore, the evaluation of the effectiveness of the nutrition education shall be made by taking into consideration various factors and elements.

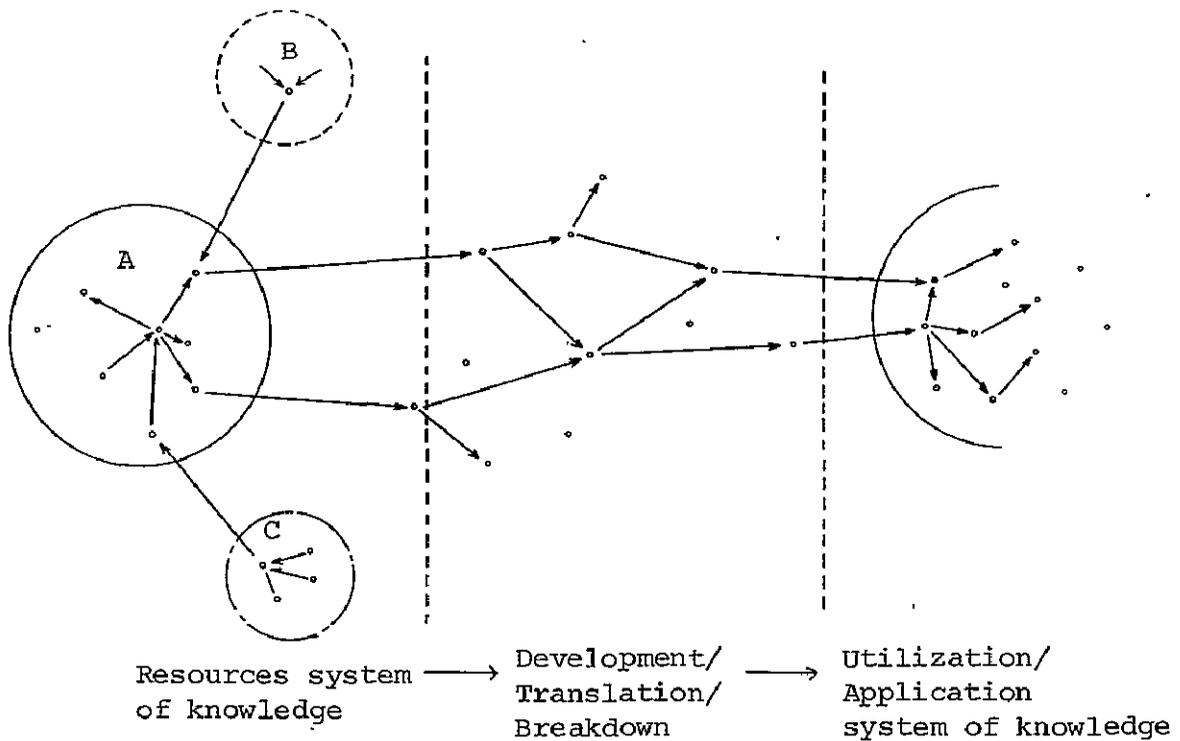
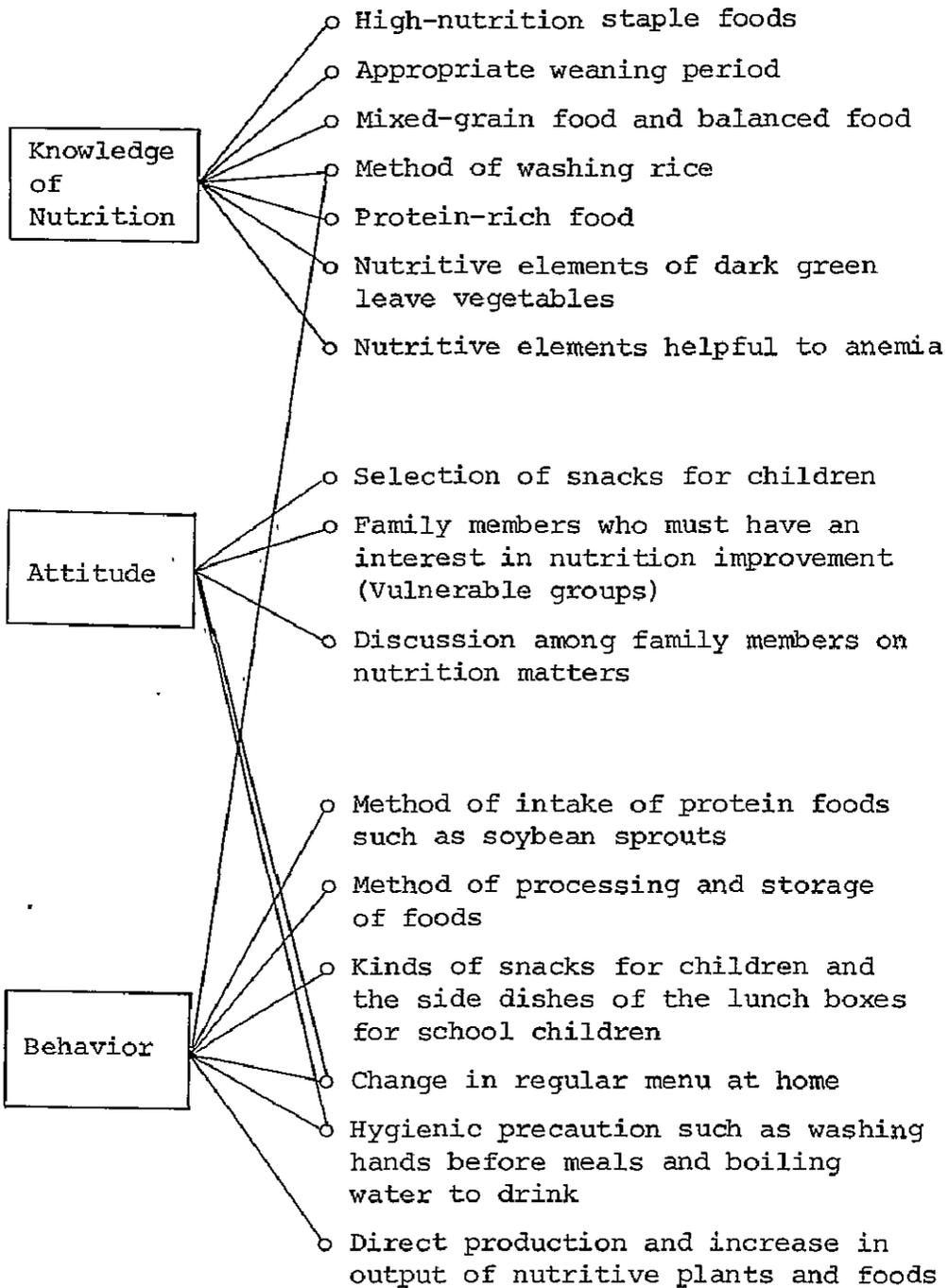


Fig. 8. Knowledge transfer, interaction and utilization

The effectiveness of Wonseong County Model Nutrition Education Project was analyzed by taking into account the base line data of the area as well as the result of questionnaire of the people. The questionnaire on knowledge, attitude and nutrition status for housewives, members of Civil Defense Forces and primary school children included the items as follows.



More people in NE County (Wonseong County) have correct knowledge of nutrition and correct understanding of attitude and behavior concerning the nutrition matters than the people in control (Hyeongseong) County. However, it should be pointed out that a relatively small percentage (17-81%) has made correct answers among the people in NE County. The relative small percentage of knowledge may be attributed to the factors that there was limited time to absorb the education by the people.

More people in NE County ate soybean sprouts and soybean milk and provided nutritive foods such as "Wooryang-A and Milk" for their children than the people in Control County. Most people in Control County gave to their children snacks such as sweet and white potatoes, fried cakes and bread.

There was no considerable increase in the self-production of nutritive plants and vegetables promoted by the educational program. However, 47% of the members of Civil Defense Forces said that they recommended their wives to increase the nutritive foods such as vegetables, protein foods and mixed-creal meals after they received the nutrition education.

It is encouraging that 51-85% of the people in Wonseong County said that "The nutrition education was useful and productive in their dietary life" (see Table 45), and that 93% of the housewives and 79% of the CDF members expressed their desire to "Attend again" the class of the nutrition education (see Appendix 42). Social Workers in charge of nutrition improvement in NE also expressed the same encouraging opinions.

Therefore, the nutrition education in NE County has brought about a positive result in the improvement of knowledge, attitude and behavior related to the nutrition status.

Table 45. Contribution degree of various NE method to actual dietary life

Contribution degree	Housewives		CDF members		
	NE training (178)	NE radio program (138)	NE training (101)	NE radio program (105)	Pamphlet (84)
Very helpful	38.8%	29.7%	16.8%	21.0%	23.8%
A little helpful	46.6	42.0	35.6	42.9	47.8
So so	11.2	12.3	29.7	20.0	14.3
Little helpful	2.8	13.0	11.9	14.3	13.1
Never helpful	0.6	2.9	5.9	1.9	1.2
Average *	4.20	3.83	3.46	3.67	3.80

- * Very helpful (5 point)
 A little helpful (4 point)
 So so (3 point)
 Little helpful (2 point)
 Never help (1 point)

In a rather tentative and exploratory way, it was attempted to find something about statistical significance on the various data of survey which was conducted in NE County and Control County. χ^2 -test method was adapted for the determination of that the differences would have become statistically significant between NE County and Control County. As shown in Table 46, statistical results are summarized as followings.

In the nutrition knowledge of "protein-rich foods" the difference between NE and Control County is statistically significant ($P < 0.01$) in both group of students and housewives.

Table 46. Summary of statistical analysis on the differences of nutrition knowledges, attitude and behavior between NE County and Control County

Item	χ^2	P	Significance
1. Nutrition knowledge			
High-nutritive staple food (Housewives)	0.055	0.80<P<0.90	
(Students)	22.694	P<0.001	****
Weaning period (Housewives)	1.919	0.10<P<0.20	*
Proper washing method of rice (")	0.027	0.80<P<0.90	
Protein-rich food (")	4.204	0.02<P<0.05	***
(Students)	13.043	P<0.001	****
Nutritive elements for anemia (Housewives)	3.437	0.05<P<0.10	**
Most abundants nutrient in Dark-green leaves (Students)	1.563	0.02<P<0.30	
Accuracy of nutrition knowledge (")	0.211	0.50<P<0.70	
2. Attitude			
Factors selecting snack (Housewives)	7.802	0.001<P<0.01	***
(Students)	2.210	0.10 <P<0.20	*
Vulnerable group among family member toward nutrition and health(Housewives)	12.545	P<0.001	****
3. Behavior			
Intake of protein food (Housewives)	0.449	0.50<P<0.70	
Food preparation and storage (")	2.077	0.10<P<0.20	*
Supply of supplementary food (")	0.071	0.70<P<0.80	
Washing hands before taking meal (")	0.428	0.30<P<0.50	
Boiling of drinking water (")	27.280	P<0.001	****
Balance diet (Students)	14.586	P<0.001	****

* ; Significant at the 20% level
 ** ; Significant at the 10% level
 *** ; Significant at the 1% level
 ****; Significant at the 0.1% level

The differences are also significant in the knowledge of "weaning" ($P < 0.01$) and "nutritive elements helpful for anemia" by housewives. "High nutritive staple foods" considered as highly significant differences ($P < 0.001$) by student.

On the other hand, in the attitudes of "selection of snack for children" ($P < 0.01$ by housewives and $p < 0.20$ by students), "vulnerable group among family members" ($P < 0.01$ by housewives), there are a significant difference between two Counties. And the differences are also significant in "preservation and preparation of foods" ($P < 0.20$ by housewives), "boiling water to drink" ($P = 0.001$ by housewives) and "balanced diet" ($P < 0.001$ by students) between NE and Control Counties.

From this results, it could be said that there is a significant difference between two Counties on the basic nutrition knowledge such as "protein", "anemia", "supplementary food for health", "nutritive foods", "balanced diet" and "boiling water to drink". However, there is no significant difference between two Counties on the practical behavior such as "preparation and consumption of protein-rich food such as soybean soup" and "supply of supplementary food". In this comment "not significant" means that with that sample size, with those categories, with that form of statistical test the difference is not demonstrable at the given level of significance. This is a situation in which there is a little discrepancy between knowledge and practice. However, it would be interesting to point out that the discrepancy mentioned above is just a little and there appears to be nutritional achievement as shown in the survey of food intake and health status conducted in NE County.

4. IMPROVEMENT OF NUTRITION AND HEALTH STATUS

The nutrition education is designed and tried to improve the nutrition and health of the people. The improvement in the nutrition and health of the people depends not only on the nutrition education but also on various factors such as kinds of available nutritive foods, special feeding program, purchasing power of foods of the people, primary health care and other social conditions (see Figure 9). (16,21)

The rural communities in Korea have increased agricultural income and developed cultural facilities in the past decades. The government has encouraged the farmers to increase their self-supporting rate to 80% by developing the agricultural technical training program and the special income-raising project in the rural communities. The government has also encouraged the farmers to reconstruct and repair obsolete houses, and helped the development of water supply system, provided roving medical service teams and communication facilities and electricity. The increased distribution of radio and television sets in the rural communities also has prompted the farmers to improve their living standards and consumption pattern. (20)

The annual average income of farmers has remarkably increased by 31.5% to 1,884,000 won per family in 1978 over 1977. Of the total household expenditures in rural communities in 1978, 38.3% went for foodstuffs and beverage, 8.6% for housing, 7.0% for clothes, 8.0% for education, 4.6% for heating and lighting, and 33.5% for miscellaneous outlays. The ratio of the expenditures for foodstuffs and beverage in comparison with the total outlays (Engels' index) declined

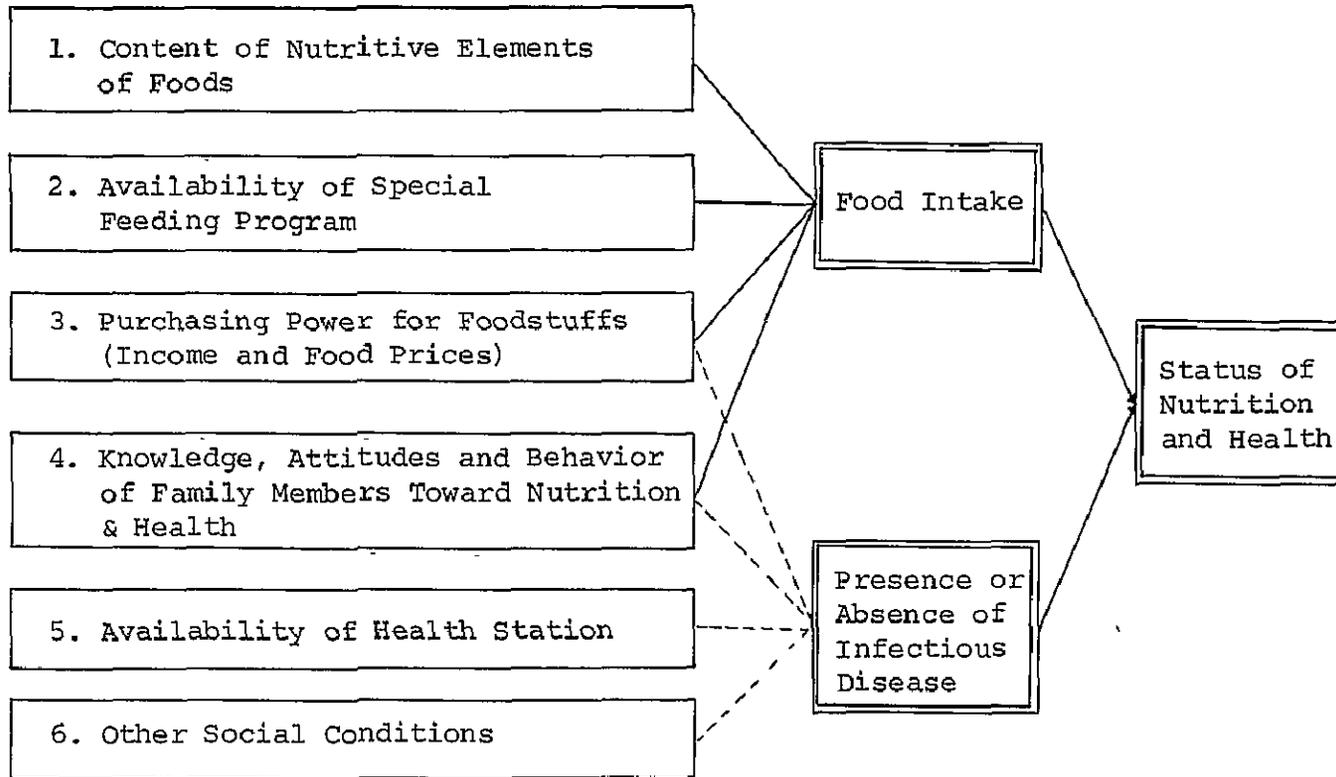


Fig. 9. Various factors contributing to the improvement in nutrition and health of the people

sharply since 1975 prompted by the remarkable increase in farmers' incomes.⁽²⁰⁾ The increased income as well as the overall social and cultural development might have brought on a great impact on the nutrition status and health status of the rural people.

This analysis and evaluation has compared the status of nutrition and health of the people in NE County (in 1976) before and after the nutrition education project was carried out during 1978-1980. The status in NE (Wonseong) County was also compared with that of Control (Hyeongseong) County.

The number of kinds of foods, which the people in NE County ate, increased from 101 items in 1976 to 128 in 1979 and again to 160 in 1980. The per capita daily average intake of foods also increased from 894g in 1978 to 970g in 1980. The increase was remarkable in the intake of dairy products, vegetables and fruits, seasoning and processed foods. In this point, it is considered that the increased intake of animal protein and dark green leaves vegetables will be attributable to the nutrition education. The 24hr-recall survey showed that the per capita daily average intake of nutritive foods by the preschool children (4-6 age group) and pregnant and lactating women in NE County was better qualitatively and quantitatively than their counterparts in Control County. In particular, the mothers in NE County took in more dairy products, vegetables and fruits which were almost double the amount in Control County.

The per capita daily average intake of calories of the people in NE County increased from 1,810 kcal in 1978 to 1,834 kcal in 1980, of protein from 52.5g to 57g of animal protein from 7.7g to 10g and of fat from 14.2g to 20g, respectively, during 1978-1980. The intake of calcium,

vitamin A, B₁ and B₂ also increased remarkably. The survey showed that the people in NE County took in more nutritive foods than their counterparts in Control County in 1980. However, the daily average intake of calories, protein, calcium, iron and vitamin B₂ by the people in NE County fell short of the Recommended Dietary Allowance.

Considering the overall factors, the Wonseong County Model Nutrition Education Project has contributed greatly to the improvement of the nutrition status of the people in Wonseong County. And also the nutritive snack of "Wooryang-A" has considered to help the improvement of nutrition status of the children in that county.

Concerning the physical status, anemia and clinical symptoms, and infections of parasites among the children, the analysis showed that the average height of the preschool boy children increased remarkably in 1980 compared with 1978. However, the average height of the children fell short of the nationwide Korean Standard height of the children. The average height of pre-school girl children remained unchanged between 1978 and 1980, and there was no considerable difference between in NE County and Control County. However, the average height of girl children reached the nationwide standard height for girl children.

The hemoglobin content in blood was 11.8% for pre-school children and 12.0% for pregnant and lactating women in NE County in contrast with 0.3% and 11.0% for the same respective group in Control County, indicating a higher hemoglobin content in the former County. The frequency of anemia was 26.1% for pre-school children and 21.9% for pregnant and lactating women in NE County in contrast with 73.3% and 42.9% for the same respective group in Control County, indicating

that the latter County has more frequency of anemia. However, the average frequency rate of anemia was higher than the national average.

There was no considerable difference in the percentage of preschool children in both NE and Control Counties, who suffered from cheilosis, nasolabial seborrhea, Gum swollen and dental caries. There was also no considerable difference in the percentage of preschool children in the two counties, who were infected with parasites. There was no infections other than roundworms. The infection rate of roundworms in NE County has greatly decreased in 1980 from 1978.

The improvement in nutritive status of the people will be attributed to the Model Nutrition Education Project. However, it will take time before such improvement in knowledge, attitudes and behavior and nutrition status bring about an improvement in the physical status and health of the people.

5. PUBLIC OPINION ON WONSEONG COUNTY MODEL NUTRITION EDUCATION PROJECT

Local government officials including chief of the Office of Wonseong County, chief of Wonseong County/ORD, the school inspector of the Office of Education in Wonjoo City, head of Wonseong County Health Center, and leaders of the Nutrition Improvement Clubs said in an interview that "Wonseong County Model Nutrition Education Project was positive and successful". They said unanimously that the project is expected to be continued and extended to improve further the nutrition status of the people in the County.

In a questionnaire, 80.7% of the social workers said that "the Project was very/considerably successful" (see Appendix 43), and 93.5% of the social workers in NE County made a positive comment on the result of the Project and extension/continuation of project (see Table 47).

Table 47. Opinion of social workers on the extension/continuation of nutrition education project

Opinion	Total (31)	Occupation			Educational level	
		Health Centre staff (19)	Teacher (7)	Other (5)	High school graduate (24)	College graduate
Yes	93.5%	89.5%	100.0%	100.0%	91.7%	100.0%
No	6.5	10.5	-	-	8.3	-

The above public opinion could be summed up that 1) Wonseong County Model Nutrition Education Project was successfully carried out, and that 2) such Project is expected to be continued and extended in the coming years.

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Analysis and Evaluation of Wonseong County

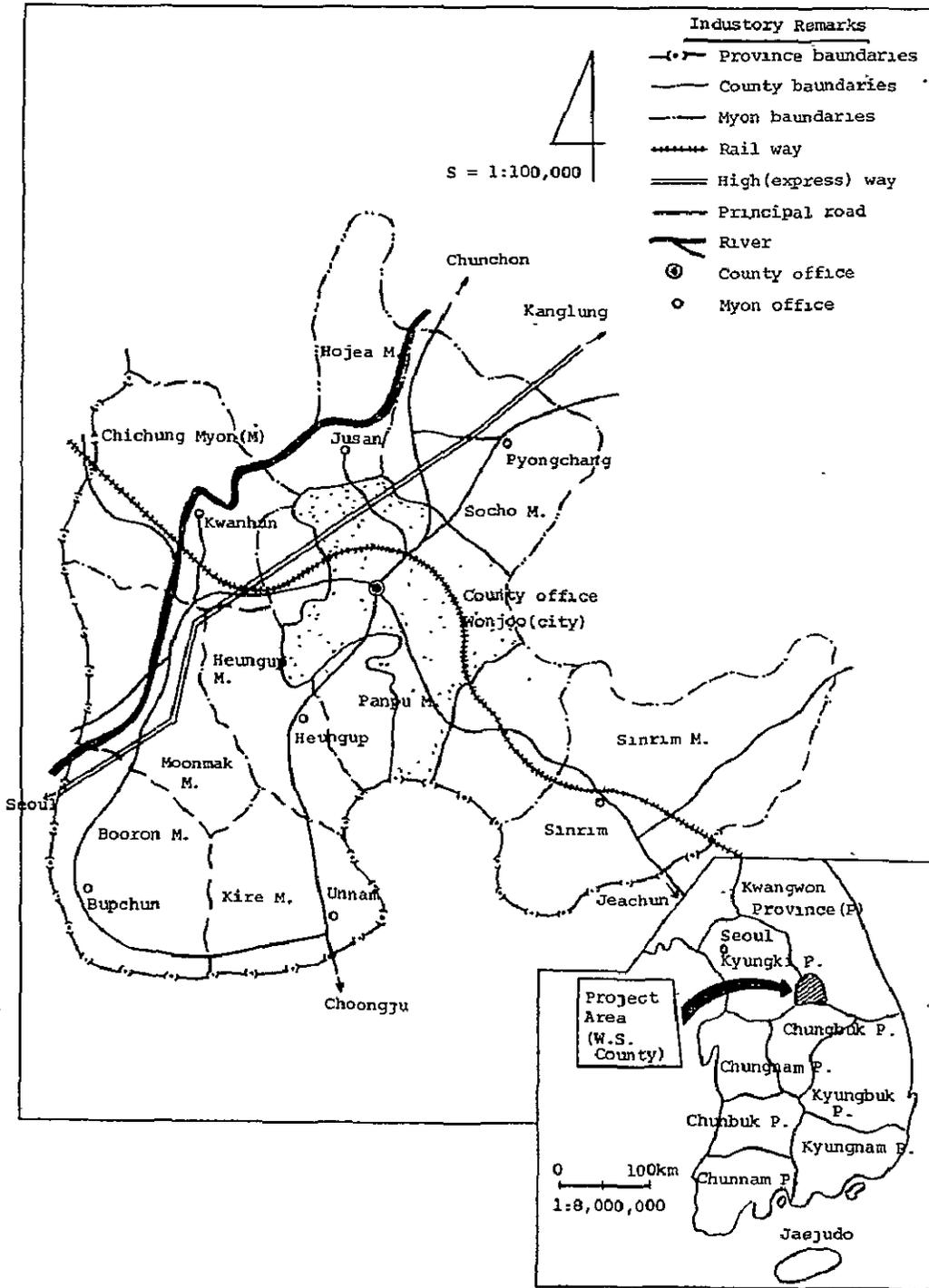
Model Nutrition Education Project

Appendix (1-44)

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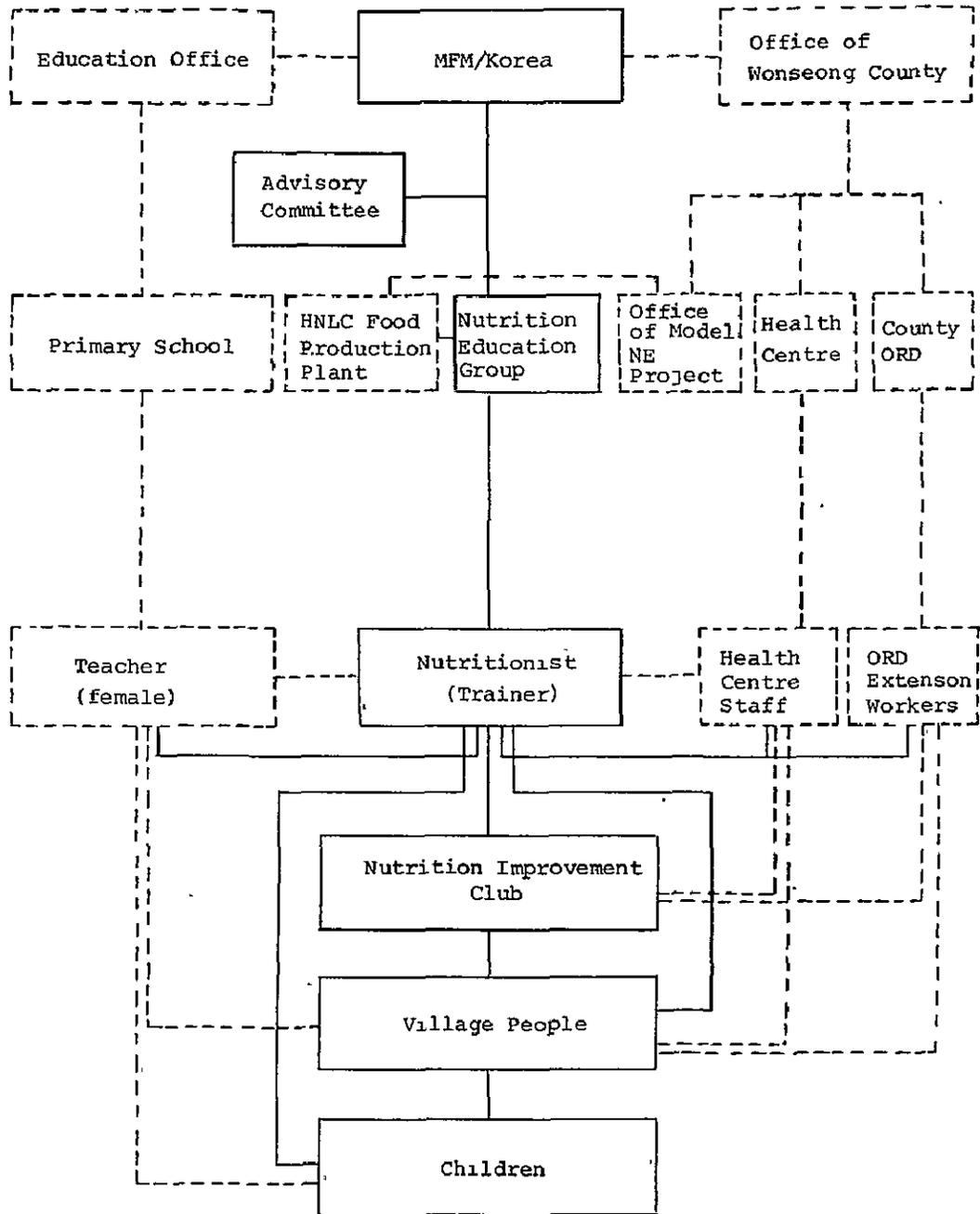
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Appendix 1. Map of Wonseong County



131

Appendix 2. Operational system and organization of Model Nutrition Education (NE) Project



Remark: — MFM System

--- Supporting System for Model NE Project

132

Appendix 3. Budget of Model NE project
(\$199,412, 1978-80 year)

	<u>'78.2.10-</u> <u>'79.2.10</u>	<u>'79.2.10-</u> <u>'79.12.30</u>	<u>'80.1.1-</u> <u>'80.6.30</u>	Total (<u>'78.2-</u> <u>'80.6</u>)
I. PERSONNEL COST				
Salary	8,703,666	10,356,664	7,933,749	
<u>Sub Total</u>	<u>8,703,666</u>	<u>10,356,664</u>	<u>7,933,749</u>	<u>26,994,079</u>
II. COMMODITY COSTS				
Supply		432,429	537,531	
Printing		445,168	197,370	
File Box		98,300	-	
Fuel		83,105	120,180	
Dietary Scale		197,500	-	
Utensils		13,000	-	
<u>Sub Total</u>	<u>2,203,219</u>	<u>1,269,502</u>	<u>885,081</u>	<u>4,327,802</u>
III. TRAINING COSTS				
Meeting		116,350	402,066	
Workshop		-	467,400	
Trip		-	-	
Handbook		674,600	-	
Booklet		516,260	-	
Poster		-	650,000	
Pamphlet		502,450	320,000	
Flannel Part		314,260	123,540	
Flip Chart		370,000	-	
Movie Film		-	-	
Slide Set		103,750	-	
Cooking Demonstration		853,785	506,997	
Contest		138,200	17,900	
Fair		303,500	-	
<u>Sub Total</u>	<u>1,565,155</u>	<u>3,893,155</u>	<u>2,687,903</u>	<u>8,146,213</u>
IV. NUTRITION EVALUATION				
<u>Sub Total</u>	<u>5,489,778</u>	<u>0</u>	<u>7,000,000</u>	<u>12,489,778</u>
V. TECHNICAL ASSISTANCE COSTS				
Direct Admin. Cost	5,504,268	4,912,110	1,917,480	
Consultant	205,000	1,870,175	2,387,200	
		(\$384) Direct		
		Exp.		
Internation Travel	1,074,356	-	63,800	
	(\$1,225)			
	Direct Exp.			
Local Travel	1,118,740	3,850,835	3,063,570	
<u>Sub Total</u>	<u>7,902,364</u>	<u>10,633,120</u>	<u>7,432,050</u>	<u>25,967,534</u>
VI. Communication				
Telephone		531,851	375,744	
Postage		89,459	77,249	
Telex		100,000	-	
<u>Sub Total</u>	<u>804,351</u>	<u>721,310</u>	<u>452,993</u>	<u>1,978,654</u>
Grand Total	W26,668,533	W26,873,751	W26,361,776	W79,704,066
	(\$1,225)	(\$384)	(\$ -)	(\$1,609)

133

Appendix 4. Working schedule for W.S. County Model NE project

Project content	1st year (1978)				2nd year (1979)				3rd year (1980)			
	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.
o Organization and training of staff	←→											
o Data collection and analysis	←→	←→										
o Arrangement of educational aids and materials	←→											←---→
o Radio education broad casting					←→	←→	←→	←→	←→	←→	←→	←---→
o Education training for NIC					←→	←→	←→	←→			←→	←---→
o Education training for CDF			←→			←→	←→	←→		←→		
o Education training for HRF		←→		←→		←→	←→	←→				
o Education training for primary teacher			←→		←→	←→	←→	←→			←→	←---→
o Education training for county social workers			←→	←→	←→	←→		←→	←→	←→	←→	←---→
o Education training for Saemaul leaders			←→	←→								
o Workshop			←→				←→		←→			←---→
o Demonstration & contest							←→				←→	←---→
o Food & nutrition survey					←→	←→	←→	←→	←→	←→	←→	
o Self-evaluation		←→		←→		←→		←→				

←→ Finished
 ←---→ In progress

136

Appendix 5. Major activity of W.S. County
Model NE project

As of August, 1980

	1st year (1978)			2nd year (1979)			3rd year (1980)		
	Content	Activity		Content	Activity		Content	Activity	
		Time (day)	Number (person)		Time (day)	Number (person)		Time (day)	Number (person)
Jan.	Empolyment of project staff Collection of basic data		3	Training for social worker Training for NIC leader	1 1	19 8	Training for social worker	1	29
Feb.	Collection of basic data Preparation of educational aids and materials			Training for teacher Training for NIC Begin to Radio program	2 1	43 99	1980 evaluation planning Training for social worker	1	28
Mar.	Collection and analysis of basic data Preparation of education material Meeting of advisory committee			Kanahan farmers training institute Training for social worker	1 1	620 21	Meeting of advisory committee Training for social worker Training for NIC Workshop; Medical check-up	1 1 1 1*	27 90 56*
Apr.	Analysis of basic data Preparation of educational aids and materials			Training for social worker Training for CDF and Kanahan farmers training institute	1 1 1	24 6,541 750	Training for social worker Training for NIC Training for teacher	1 1 1	28 98 38
May	Development of educational aids and materials			Training for NIC Kanahan farmers training institute	1 1	104 350	Kanahan farmers training institute Training for social worker Training for NIC Training for teacher	1 1 1 1	638 26 402 62
Jun.	Education aids and materials printing Arrangement of education Evaluation Meeting of advisory committee			Training for social worker Training for HRF Kanahan farmers training institute Evaluation, Medical check-up Meeting of advisory committee	1 1 1	25 125 503	Training for social worker Training for CDF Medical check-up Meeting of advisory committee	1 8	29 1,519
Jul.	Training for social worker Training for teacher Nutrition survey	3 3	30 51	Training for NIC Training for HRF Training for social worker	1 1 2	108 413 11	Training for social worker Training for CDF Nutrition survey	1 8	30 3,436
Aug.	Training for HRF	1	98	Training for social worker Training for HRF Kanahan farmers training institute	1 1 1	24 520 200	Training for social worker Training for teacher Demonstration & contest Training for NIC	1 4 1 1	- 38 155 175
Sep.	Training for HRF Training for saemaul leader & resident Meeting of advisory committee	1 1	4,672 380	Training for HRF Workshop Medical check-up Meeting of advisory committee	1	518	Training for social worker Medical check-up Meeting of advisory committee Complete of educational aids and materials	1	-

(Continued)

	1st year (1978)			2nd year (1979)			3rd year (1980)		
	Content	Activity		Content	Activity		Content	Activity	
		Time (day)	Number (person)		Time (day)	Number (person)		Time (day)	Number (person)
Oct.	Training for saemaul leader & resident	1	363				Training for social worker Demonstration & contest Workshop	1 1 1	- - -
Nov.	Training for saemaul leader Training for HRF Workshop	1 1 1	652 80 39	Training for social worker Training for NIC Training for teacher	1 2 1	24 304 54	Training for social worker Training for NIC Demonstration	1 1 1	- - -
Dec.	Training for saemaul leader Training for social worker Evaluation, Meeting of advisory committee	1 2	102 40	Training for NIC Medical check-up, evaluation Meeting of advisory committee	1	104	Training for social worker Training for teacher Medical check-up evaluation, Meeting of advisory committee	1 4	- -

Appendix 6. Working schedule for Analysis and Evaluation of Model W.S. County NE project

Content	Working schedule					
	Apr.	May	Jun.	Jul.	Aug.	Sep.
1. Set-up and meeting of evaluation committee						
1) Set-up of committee	←→					
2) Committee meeting		←→	←→	←→		
3) Field trip to project area		←→	←→	←→		
2. Survey and Evaluation						
1) 1st interview(survey)		←→				
Planning		←→				
Printing		←→				
Field survey		←→				
2) 2nd interview			←→			
3) Nutrition survey		←→				
Planning		←→				
Printing		←→				
Field survey				←→		
3. Analysis of survey data						
1) 1st interview data			←→			
2) 2nd interview data				←→		
3) Nutrition survey data					←→	
4. Arrangement of evaluation data						
1) Arrangement of evaluation data				←→		
2) Overall evaluation and discussion						←→
5. Preparation of report						
1) Report preparation and translation					←→	
2) Printing						←→

Appendix 7. Survey area and samples for interview and 24-hr recall survey

Group	County	Area	Number of sample
NE group	W.S. county	Chichung M. Kanhun 1 Ri (R)	50 families (housewives) (preschool children, pregnancy, lactating women)
		Socho M. Okwan R.	20 families (housewives, CDF) (")
		Socho M. Jangyang 4 R.	20 families (") (")
		Socho M. Pyongjang 1 R.	20 families (") (")
		Heungup M. Maeje 1 R.	20 families (") (")
		Heungup M. Heungup 1 R.	20 families (housewives) (")
		Sinrim M. Sinrim 1 R.	10 families (") (")
		Sinrim M. Youngam 1 R.	40 families (") (")
		Bankai primary school (Moonmak)	50 persons (students)
County officials	31 persons (Health Centre staff, teacher, Rural Guidance officer)		
Control group	Hyeongseong county	Hyeongseong M. Chungyong R.	50 families (housewives) (preschool children, pregnancy, lactating woman)
		Sungnam primary school (kukgu)	50 persons (students)

128

Appendix 8. Survey area and samples for clinical and anthropometry food consumption survey

Group	County	Area	Number of sample
NE group	W.S. county	Moonmak M. Chybung R.	24 families (preschool children, pregnancy, lactating women, villager)
		Moonmak M. Gungchon R.	24 families (")
		Chichung M. Botong R.	16 families (")
		Chichung M. Kanhun R.	15 families (")
		Sinrim M. Sinrim 2 R.	20 families (")
		Sinrim M. Youngam 2 R.	20 families (")
		Socho M. Okwan R.	20 families (")
		Heungup M. Heungup 1 R.	20 families (")
Control group	H.S. county	Hyeongsung M. Chungyong R.	10 families (")
		Hyeongsung M. Mookgui R.	10 families (")
		Hyeongsung M. Kukgu R.	10 families (")

Appendix 9. Surveyer list for interview and
24-hr recall survey

P.J. Lim, I.S. Park, Y.M. Kim, S.A. Kim, M.J. Kwon, C.K. Jin,
B.J. Lee, Y.O. Kim, K.J. Lim, H.S. Moon, O.S. Kim, J.H. Wang,
Y.S. Kwon, J.H. Lee, M.O. Han, H.R. Kim, S.J. Lee, S.J. Kim,
K.S. Lee, K.S. Kim, H.M. Park, H.M. Sin, M.H. Kim, S.M. Seo,
M.S. Lee, S.O. Choi, Y.A. Cho, M.H. Seo, S.J. Choi, H.J. Lee,
E.L. Kwon, O.B. Han, J.H. Son, J.H. Doo, J.H. Han, H.S. Oh,
K.H. Lee, H.S. Kim, H.B. Kim, S.H. Kong, Y.O. Lee, H.S. Cho,
M.S. Kwon

Total 43 (person)

Appendix 10. Surveyer list for nutrition-food
intake and clinical survey

W.I. Whang, C.K. Yoo, S.D. Lee, M.J. Lin, Y.K. Park, M.H. Kang,
S.H. Lee, S.J. Oh, Y.S. Kim, O.H. Min, J.S. Lee, H.S. Kim,
S.H. Kim, B.J. Cho, A.J. Jung, K.H. Lee, K.C. Whang, S.H. Son,
S.Y. Hwang, O.H. Choi, H.J. Kim, C.S. Kim, H.S. Ha, J.S. Choi,
K.O. Park, H.S. Park, J.H. Lee, Y.H. Jang, O.H. Yoon, M.H. Kim,
S.A. Sin, Y.J. Song, H.J. Ha, Y.J. Nam, J.S. Han, H.S. Cho,
C.S. Yoo, J.I. Chea, K.H. Choi, Y.A. Yoo, T.S. Lee, Y.S. Lee,
M.S. Bea, J.S. Kang, T.H. Ro, S.I. Jang, D.J. Lee, J.M. Park,
Y.N. Choi, O.H. Han

Total 50 (person)

Appendix 11. Principal trainer (deliver) of nutrition knowledge to housewives or CDF

11-1 : Housewives

Response	Total (200)	Age (Years)				Educational level			
		20-29 (56)	30-39 (54)	Over 40 (87)	No answer (3)	Primary school graduate (133)	Middle school graduate (51)	High school graduate (13)	No answer (3)
Woman's club leader or NIC leader	12.5%	16.1%	11.1%	11.5%	- %	12.0%	13.7%	15.4%	- %
ORD extension worker	18.5	12.5	18.5	21.8	33.3	21.1	13.7	7.7	33.3
Health Centre staff	19.5	14.3	27.8	18.4	-	15.8	21.6	53.8	-
County officials	-	-	-	-	-	-	-	-	-
MFM nutritionist	41.5	50.0	29.6	44.8	-	43.6	45.1	15.4	-
Nutritionist or professor	5.5	7.1	9.3	2.3	-	5.3	5.9	7.7	-
No answer	2.5	-	3.7	1.1	66.7	2.3	-	-	66.7

11-2 : Civil Defence Forces members

Response	Total (132)	Age (Years)				Educational level			
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	High school graduate (64)	No answer (13)
Woman's club leader or NIC leader	18.9%	20.0%	12.9%	21.2%	16.7%	30.0%	24.0%	12.5%	15.4%
ORD extension worker	12.1	10.0	16.1	11.8	-	20.0	8.0	7.8	23.1
Health Centre staff	11.4	30.0	6.5	11.8	-	13.3	16.0	7.8	15.4
County officials	3.8	-	-	3.5	33.3	-	4.0	1.6	23.1
MFM nutritionist	22.7	20.0	12.9	25.9	33.3	16.7	16.0	29.7	15.4
Nutritionist or profes- sor	20.5	10.0	38.7	15.3	16.7	10.0	20.0	28.1	7.7
No answer	10.6	10.0	12.9	10.6	-	10.0	12.0	12.5	-

144

142

Appendix 12. Suitability on the selection of time and place
for NE training for Housewives and CDF members

12-1 : Housewives

Response	Total	Age (Years)					Educational level					
		20-29	30-39	40-49	Over 50	No answer	Under primary school graduate	Primary school graduate	Middle school graduate	High school graduate	College graduate	No answer
	(178)	(52)	(44)	(60)	(21)	(1)	(18)	(103)	(46)	(9)	(1)	(1)
Very good	38.8%	40.4%	31.8%	45.0%	28.6%	100.0%	55.6%	35.9%	37.0%	44.4%	- %	100.0%
Not good or bad	44.9	50.0	47.7	46.7	52.4	-	38.9	49.5	41.3	33.3	-	-
Very bad	14.6	9.6	18.2	18.3	9.5	-	-	12.6	21.7	22.2	100.0	-
No answer	1.7	-	2.3	-	9.5	-	5.5	1.9	-	-	-	-

145

12-2 : Civil Defence Forces members

Response	Total	Age (Years)					Educational level				
		20-29	30-39	40-49	Over 50	No answer	Primary school graduate	Middle school graduate	High school graduate	College graduate	No answer
	(101)	(8)	(22)	(62)	(3)	(6)	(24)	(18)	(34)	(12)	(13)
Very good	18.8%	- %	9.1%	21.0%	33.3%	50.0%	37.5%	- %	14.7%	8.3%	30.8%
Not good or bad	51.5	50.0	68.2	46.8	33.3	50.0	25.0	66.7	58.8	58.3	53.8
Very bad	28.7	50.0	22.7	30.6	33.3	-	37.5	33.3	26.5	33.3	7.7
No answer	1.0	-	-	1.6	-	-	-	-	-	-	7.7

143

Appendix 13. Participation frequency of housewives
and CDF on NE training program

13-1 : Housewives

Frequency (Times)	Total (177)	Age (Years)			Educational level		
		20-29 (52)	30-39 (44)	Over 40 (81)	Primary school graduate (121)	Middle school graduate (46)	High school graduate (10)
1 - 2	59.3%	58.1%	34.1%	30.9%	36.4%	45.6%	44.4%
3 - 4	21.7	21.1	31.8	23.5	22.3	34.8	11.1
5 - 6	17.4	13.5	20.4	17.3	18.2	10.9	33.3
7 - 8	8.4	1.9	6.8	13.6	10.7	4.4	-
9 - 10	7.9	5.7	4.6	11.1	9.9	2.2	11.1
Over 11	2.4	-	2.3	3.7	2.5	2.2	-

13-2 : Civil Defence Forces members

Frequency (Times)	Total (101)	Age (Years)				Educational level			
		20-29 (8)	30-39 (22)	Over 40 (65)	No answer (6)	Primary school graduate (24)	Middle school graduate (18)	High school graduate (46)	No answer (13)
No answer	6.9%	- %	18.2%	4.6%	- %	12.5%	11.1%	2.2%	7.7%
1 - 2	76.3	50.0	72.7	83.1	50.0	75.0	77.8	80.4	61.6
3 - 4	11.9	12.5	9.0	9.2	50.0	12.5	11.1	6.5	30.8
5 - 6	2.0	12.5	-	1.5	-	-	-	4.3	-
7 - 8	1.0	-	-	1.5	-	-	-	2.2	-
9 - 10	2.0	25.0	-	-	-	-	-	2.2	-
Over 11	-	-	-	-	-	-	-	-	-

144

Appendix 14. Frequency on the receiving of NE
aids and materials

14-1 : Housewives

Frequency (Times)	Total (151)	Age (Years)			Educational level		
		20-29 (38)	30-39 (41)	Over 40 (72)	Primary school ; graduate (108)	Middle school graduate (34)	High school graduate (9)
1 - 2	37.5%	42.1%	41.5%	33.3%	35.2%	44.1%	44.4%
3 - 4	21.1	26.3	22.0	18.1	19.4	23.5	33.3
5 - 6	20.4	15.8	19.6	22.2	19.4	23.5	11.1
7 - 8	5.9	7.9	-	8.3	7.4	2.9	-
9 - 10	9.9	5.3	12.2	11.1	12.0	2.9	11.1
Over 11	5.3	2.6	4.8	6.9	6.5	2.9	-

14-2 : Civil Defence Forces members

Frequency (Times)	Total (88)	Age (Years)				Educational level			
		20-29 (8)	30-39 (19)	Over 40 (55)	No answer (6)	Primary school graduate (14)	Middle school graduate (12)	High school graduate (51)	No answer (11)
No answer	2.3%	- %	10.5%	- %	- %	- %	- %	3.9%	- %
1 - 2	77.3	40.0	63.7	80.0	100.0	92.9	100.0	62.7	100.0
3 - 4	12.5	12.5	10.5	14.5	-	7.1	-	19.6	-
5 - 6	5.7	25.0	5.3	3.6	-	-	-	11.8	-
7 - 8	1.1	12.5	-	-	-	-	-	2.0	-
9 - 10	1.1	-	-	1.8	-	-	-	2.0	-
Over 11	-	-	-	-	-	-	-	-	-

145

Appendix 15: Listening rate of NE radio program
(Based on ; 3-4 Times/Week)

	Age (Years)			Educational level			
	20-29	30-39	Over 40	Primary school graduate	Middle school graduate	High school graduate	Total
Housewives	24.3%	28.9%	21.4%	17.3%	36.6%	50.0%	23.9%
CDF members	30.0	18.1	23.8	15.3	20.0	28.6	22.8

Appendix 16. Activity of Nutrition Improvement Club

Response	Total (31)	Occupation			Educational level	
		Health Centre staff (19)	Teacher (7)	Other (5)	High school graduate (24)	College graduate (7)
Very worthy	25.8%	21.1%	28.6%	40.0%	29.2%	14.3%
A little worthy	48.4	52.6	28.6	60.0	41.7	71.4
So so	16.1	15.8	28.6	-	16.7	14.3
Little worthy	6.5	5.3	14.3	-	8.3	-
Never worthy	-	-	-	-	-	-
No answer	3.2	5.3	-	-	4.2	-

148

Appendix 17. Understanding of NE training content by housewives of CDF

17-1 : Housewives

Response	Total (178)	Age (Years)					Educational level					
		20-29 (52)	30-39 (44)	40-49 (60)	Over 50 (21)	No answer (1)	Under primary school graduate (18)	Primary school graduate (103)	Middle school graduate (46)	High school graduate (9)	College graduate (1)	No answer (1)
Very difficult	3.4%	1.9%	2.3%	5.0%	4.8%	-	11.1%	1.9%	4.3%	- %	- %	- %
A little difficult	18.5	15.4	6.8	21.7	42.9	-	27.8	19.4	15.2	11.1	-	-
So so	41.0	42.3	54.5	35.0	23.8	100	44.4	42.7	34.8	33.3	100.0	100.0
A little easy	29.2	34.6	29.5	28.3	19.0	-	5.6	31.1	32.6	44.4	-	-
Very easy	6.7	5.8	6.8	6.7	9.5	-	11.1	4.9	10.9	-	-	-
No answer	1.1	-	-	3.3	-	-	-	-	2.2	11.1	-	-

17-2 : Civil Defence Forces members

Response	Total (101)	Age (Years)					Educational level				
		20-29 (8)	30-39 (22)	40-49 (62)	Over 50 (3)	No answer (6)	Primary school graduate (24)	Middle school graduate (18)	High school graduate (34)	College graduate (12)	No answer (13)
Very difficult	3.0%	- %	4.5%	3.2%	- %	- %	12.5%	- %	- %	- %	- %
A little difficult	19.8	-	22.7	19.4	33.3	33.3	25.0	50.0	5.9	-	23.1
So so	44.6	25.0	45.5	46.8	33.3	50.0	45.8	22.2	55.9	33.3	53.8
A little easy	19.8	37.5	9.1	21.0	33.3	16.7	8.3	11.1	29.4	33.3	15.4
No answer	12.9	37.5	18.2	9.7	-	-	8.3	16.7	8.8	33.3	7.7

147

Appendix 18. Interest in NE training content

18-1 : Housewives

Response	Total	Age (Years)					Educational level					
		20-29	30-39	40-49	Over 50	No answer	Under primary school graduate	Primary school graduate	Middle school graduate	High school graduate	College graduate	No answer
	(178)	(52)	(44)	(60)	(21)	(1)	(18)	(103)	(46)	(9)	(1)	(1)
Very interest	50.0%	50.0%	40.9%	51.7%	61.9%	100.0%	77.8%	47.6%	47.8%	22.2%	100.0%	100.0%
A little interest	30.9	28.8	34.1	36.7	14.3	-	11.1	37.9	21.7	44.4	-	-
So so	18.5	21.2	25.0	11.7	19.0	-	11.1	3.6	30.4	33.3	-	-
Little interest	0.6	-	-	-	4.8	-	-	1.0	-	-	-	-
Never interest	-	-	-	-	-	-	-	-	-	-	-	-
No answer	-	-	-	-	-	-	-	-	-	-	-	-

150

18-2 : Civil Defence Forces members

Response	Total	Age (Years)					Educational level				
		20-29	30-39	40-49	Over 50	No answer	Primary school graduate	Middle school graduate	High school graduate	College graduate	No answer
	(101)	(8)	(22)	(62)	(3)	(6)	(24)	(18)	(34)	(12)	(13)
Very interest	17.8%	12.5%	4.5%	19.4%	66.7%	33.3%	16.7%	5.6%	17.6%	8.3%	46.2%
A little interest	34.7	12.5	59.1	32.3	-	16.7	29.2	38.9	44.1	25.0	23.1
So so	36.6	62.5	22.7	38.7	33.3	33.3	37.5	44.4	26.5	58.3	30.8
Little interest	8.9	12.5	9.1	8.1	-	16.7	16.7	5.6	8.8	8.3	-
Never interest	2.0	-	4.5	1.6	-	-	-	5.6	2.9	-	-

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Appendix 19. Desire for listening NE radio program

19-1 : Housewives

Response for listening	Total (138)	Age (Years)				Educational level				
		20-29 (37)	30-39 (38)	40-49 (49)	Over 50 (14)	Under primary school graduate (14)	Primary school graduate (84)	Middle school graduate (30)	High school graduate (9)	College graduate (1)
Every day	32.6%	43.2%	31.6%	26.5%	28.6%	21.4%	26.2%	50.0%	44.4%	100.0%
3-4 times/week	16.7	13.5	23.7	14.3	14.3	21.4	14.3	16.7	33.3	-
1-2 times/week	28.3	29.7	21.1	30.6	35.7	21.4	31.0	26.7	22.2	-
1-2 times/month	14.5	10.8	13.2	20.4	7.1	7.1	21.4	3.3	-	-
1 time/months	6.5	-	10.5	6.1	14.3	21.4	7.1	-	-	-
No answer	1.4	2.7	-	2.0	-	7.1	-	3.3	-	-

19-2 : Civil Defence Forces members

Response for listening	Total (105)	Age (Years)					Educational level				
		20-29 (10)	30-39 (22)	40-49 (64)	Over 50 (3)	No answer (6)	Primary school graduate (26)	Middle school graduate (20)	High school graduate (39)	College graduate (10)	No answer (10)
Every day	25.7%	30.0%	9.1%	29.7%	33.3%	33.3%	23.1%	30.0%	20.5%	20.0%	50.0%
3-4 times/week	21.9	10.0	22.7	23.4	66.7	-	23.1	10.0	33.3	10.0	10.0
1-2 times/week	28.6	40.0	54.5	17.2	-	50.0	26.9	20.0	35.9	20.0	30.0
1-2 times/month	14.3	10.0	9.1	17.2	-	16.7	19.2	15.0	7.7	30.0	10.0
1 time/months	8.6	10.0	-	12.5	-	-	7.7	20.0	2.6	20.0	-
No answer	1.0	-	4.5	-	-	-	-	5.0	-	-	-

Appendix 20. Understanding on educational aids and materials

20-1 : Social workers

Response	Educational aids and materials					
	Booklet (31)	Pamphlet (31)	Poster (31)	Health chart (31)	Slide (31)	Flannel (31)
Very difficult	6.5%	- %	- %	12.9%	3.2%	3.2%
A little difficult	12.9	12.9	6.5	16.1	-	9.7
So so	32.3	32.3	58.1	35.5	35.5	29.0
A little easy	22.6	25.8	12.9	12.9	32.3	32.3
Very easy	16.1	16.1	16.1	3.2	9.7	12.9
No answer	9.7	12.9	6.5	19.4	19.4	12.9

20-2 : Housewives

Response	Educational aids and materials			
	Pamphlet (120)	Poster (113)	Health chart (29)	Others (29)
Very difficult	5.8%	8.8%	3.4%	17.2%
A little difficult	29.2	21.2	37.9	17.2
So so	39.2	35.4	34.5	37.9
A little easy	15.0	24.8	17.2	20.7
Very easy	8.3	8.0	6.9	3.4
No answer	2.5	1.8	-	3.4

150

20-3 : Civil Defence Forces members

Response	Pamphlet (84)	Others (24)
Very difficult	7.1%	8.3%
A little difficult	22.6	25.0
So so	29.8	20.8
A little easy	23.8	16.7
Very easy	16.7	16.7
No answer	-	12.5

20-4 : Students (children)

Response	Pamphlet	Others
Very difficult	2.0%	2.0%
A little difficult	12.0	6.0
So so	10.0	8.0
A little easy	24.0	46.0
Very easy	52.0	38.0
No answer	-	-

Appendix 21. Interest on educational aids and materials

21-1 : Social workers

Response	Educational aids and materials					
	Booklet (31)	Pamphlet (31)	Poster (31)	Health chart (31)	Slide (31)	Flannal (31)
Very interest	19.4%	19.4%	19.4%	16.1%	38.7%	35.5%
A little interest	35.5	29.0	25.8	22.6	29.0	22.6
So so	32.3	25.8	25.8	19.4	12.9	25.8
Little interest	9.7	6.5	12.9	19.4	-	3.2
Never interest	-	9.7	6.7	3.2	-	-
No answer	3.2	9.7	9.5	19.4	19.4	12.9

21-2 : Housewives

Response	Educational aids and materials			
	Pamphlet (120)	Poster (113)	Health chart (29)	Others (29)
Very interest	27.5%	35.4%	51.7%	37.9%
A little interest	47.5	37.2	24.1	34.5
So so	18.3	23.0	17.2	17.2
Little interest	4.2	1.8	3.4	6.9
Never interest	-	1.8	-	-
No answer	2.5	0.9	3.4	3.14

152

21-3 : Civil Defence Forces members

Response	Educational aids and materials	
	Pamphlet (84)	Others (24)
Very interest	20.2%	25.0%
A little interest	52.4	33.3
So so	21.4	25.0
Little interest	6.0	8.3
Never interest	-	-
No answer	-	8.3

21-4 : Students (children)

Response	Educational aids and materials	
	Pamphlet (50)	Others (50)
Very interest	68.0%	58.0%
A little interest	22.0	36.0
So so	10.0	2.0
Little interest	-	2.0
Never interest	-	2.0
No answer	-	-

Appendix 22. Utilization (or reading) of educational aids and materials

22-1 : Housewives

Utilization (reading)	Educational aids and materials			
	Pamphlet (120)	Poster (113)	Health chart (29)	Others (29)
Very much	32.5%	34.5%	44.8	27.6%
A little	40.8	37.2	24.1	41.4
So so	9.2	14.2	13.8	10.3
Little	10.8	8.0	10.3	6.9
Never	3.3	3.5	3.4	6.9
No answer	3.4	2.7	3.4	6.9

22-2 : Civil Defence Forces members

Utilization(reading)	Pamphlet (84)	Others (24)
Very much	38.1%	25.0%
A little	34.5	41.7
So so	13.1	12.5
Little	10.7	4.2
Never	3.6	4.2
No answer	-	12.5

Appendix 23. Preference of NE aids and materials
in practical training for trainer

23-1 : By rank

Aids and materials	1st rank (31)	2nd rank (31)	3rd rank (31)	4th rank (31)	5th rank (31)	6th rank (31)	Average
Booklet	48.4%	19.4%	16.1%	10.7%	- %	8.0%	4.87%
Pamphlet	16.1	32.3	35.5	3.6	3.6	12.0	4.26
Heath chart	-	9.7	3.2	39.3	21.4	24.0	2.42
Poster	9.7	12.9	16.1	21.4	28.6	8.0	3.22
Seminar	25.8	6.5	19.4	7.1	14.3	28.0	3.39
Radio program	-	19.4	9.7	17.9	32.1	20.0	2.77

23-2 : By occupation and educational level (in 1st rank)

Aids and materials	Total (31)	Occupation			Educational level	
		Health centre staff (19)	Teacher (7)	Others (5)	High school graduate (24)	College graduate (7)
Booklet	48.4%	52.6%	42.9%	40.0%	54.2%	28.6%
Pamphlet	16.1	15.8	-	40.0	12.5	28.6
Poster	9.7	-	42.9	-	4.2	28.6
Seminar	25.8	31.6	14.3	20.0	29.2	14.3

Appendix 24. Type of high nutritive staple food

(By CDF members)

Staple food	Total (132)	Age (Years)				Educational level				NE participants		
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (64)	No answer (13)	Participation in NE training (101)	Receiving NE prints (88)	Listen to NE radio program (105)
Rice	9.1%	10.0%	- %	12.9%	- %	10.0%	16.0%	7.8%	- %	8.9%	4.5%	9.5%
Barely-rice	10.6	20.0	6.5	10.6	16.7%	13.3	12.0	6.3	23.1	10.9	13.6	12.4
Soybean-rice	31.1	40.0	32.3	31.8	-	16.7	32.0	43.8	-	31.7	33.0	30.5
Redbean-rice	1.5	-	-	1.2	16.7	3.3	-	1.6	-	1.0	2.3	1.9
Noodle	1.5	-	-	2.4	-	-	-	1.6	7.7	1.0	-	1.0
Composite-cereals	38.6	20.0	58.1	31.8	50.0	50.0	40.0	32.8	38.5	37.6	35.2	37.1
No answer	7.6	10.0	3.2	8.2	16.7	6.7	-	6.3	30.8	8.9	11.4	7.6

158

Appendix 25. Proper washing method of rice

(By housewives)

Method	Total (250)	Age (Years)				Educational level				NE participants		
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	Participation in NE training (178)	Receiving NE prints (152)	Listen to NE radio program (137)
2,3 times slightly washing	87.6%	97.0%	87.0%	84.7%	- %	87.4%	93.0%	86.7%	- %	89.3%	90.1%	85.4%
Strongly washing	11.2	3.0	13.0	15.3	-	12.6	7.0	13.3	-	10.1	9.2	14.6
No answer	1.2	-	-	-	100.0	-	-	-	100.0	0.6	0.7	-

156

Appendix 26. Age at which child ceases to have milk from mother's breast

26-1 : Housewives

Age (months)	Total	Age (Years)				Educational level				Annual income			NE participations			County	
		20-29	30-39	Over 40	No answer	Primary school graduate	Middle school graduate	Over high school graduate	No answer	Low	High	No answer	Participation in NE training	Receiving NE prints	Listen to NE radio program	NE county	Control county
	(250)	(67)	(69)	(111)	(3)	(175)	(57)	(15)	(3)	(105)	(142)	(3)	(172)	(152)	(137)	(200)	(50)
4 - 6	11.6%	4.5%	10.1%	17.1%	- %	16.0%	1.8%	- %	- %	14.3%	9.9%	- %	9.9%	7.9%	9.5%	9.0%	22.0%
6 - 12	23.2	10.4	29.0	27.9	-	24.6	26.3	-	-	33.3	16.2	-	24.7	27.6	24.1	24.1	16.0
12 - 24	50.0	62.7	50.7	43.2	-	47.4	59.6	53.3	-	43.8	55.6	-	50.6	49.3	54.7	54.7	54.0
25 and over	13.6	20.9	10.1	11.7	-	12.0	10.5	46.7	-	8.6	17.6	-	14.6	14.5	11.7	11.7	8.0
No answer	1.6	1.5	-	-	100.0	-	1.8	-	100.0	-	0.7	100.0	1.1	0.7	-	-	-

159

26-2 : Civil Defence Forces members

Age (months)	Total	Age (Years)				Educational level				Annual income			NE participations		
		20-29	30-39	Over 40	No answer	Primary school graduate	Middle school graduate	Over high school graduate	No answer	High	Low	No answer	Participation in NE training	Receiving NE prints	Listen to NE radio program
	(132)	(10)	(31)	(85)	(6)	(30)	(25)	(64)	(13)	(62)	(57)	(13)	(101)	(88)	(105)
4 - 6	11.4%	- %	6.5%	15.3%	- %	20.0%	12.0%	6.3%	15.4%	8.1%	12.3%	23.1%	14.9%	11.4%	9.5%
6 - 12	17.4	10.0	22.6	16.5	16.7	23.3	16.0	17.2	7.7	17.7	19.3	7.7	17.8	17.0	17.2
12 - 24	37.9	20.0	48.4	35.3	50.0	30.0	28.0	46.9	30.8	35.5	45.6	15.4	32.7	39.8	37.1
25 and over	27.3	60.0	22.6	25.9	16.7	20.0	32.0	29.7	23.1	33.9	19.3	30.8	28.7	25.0	30.5
No answer	6.1	10.0	-	7.1	16.7	6.7	12.0	-	23.1	4.8	3.5	23.1	5.9	6.8	5.7

157

Appendix 27. Protein-rich food

27-1 : Housewives

Food	Total (250)	Age (Years)				Educational level				Annual income			NE participation			County	
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	High (105)	Low (142)	No answer (3)	Participation in NE training (178)	Receiving NE prints (152)	Listen to NE radio program (137)	NE county (200)	Control county (50)
Milk and bean	72.4%	70.1%	78.3%	72.0%	- %	68.6%	80.7%	100.0%	- %	81.9%	66.9%	- %	74.7%	75.7%	72.3%	74.5%	64.0%
Candy	0.8	-	-	1.8	-	1.1	-	-	-	1.0	0.7	-	1.1	1.3	-	1.0	-
Cider/Cola	0.8	-	-	1.8	-	1.1	-	-	-	-	1.4	-	1.1	1.3	0.7	1.0	-
Fruit/ Vegetable	22.8	28.4	21.7	20.7	-	26.3	19.3	-	-	17.1	27.5	-	21.9	19.7	26.3	21.0	30.0
No answer	3.2	1.5	3.6	3.6	100.0	2.9	-	0	100.0	-	3.5	100.0	1.1	2.0	0.7	2.5	6.0

160

27-2 : Civil Defence Forces members

Food	Total (132)	Age (Years)				Educational level				Annual income			NE participation		
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (64)	No answer (13)	High (62)	Low (57)	No answer (13)	Participation in NE training (101)	Receiving NE prints (88)	Listen to NE radio program (105)
Milk and bean	75.8%	90.0%	74.2%	77.6%	33.3%	66.7%	76.0%	85.9%	46.2%	83.9%	71.9%	53.8%	73.3%	75.0	74.3%
Candy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cider/Cola	1.5	10.0	3.2	1.2	-	3.3	4.0	-	-	1.6	-	7.7	2.0	2.3	1.9
Fruit/ Vegetable	19.7	-	19.4	18.8	50.0	26.7	16.0	14.1	38.5	14.5	24.6	23.1	20.8	20.9	21.9
No answer	3.0	-	3.2	2.4	16.7	3.3	4.0	-	15.4	-	3.5	15.4	4.0	2.3	1.9

158

Appendix 28. Nutritive elements good for curing anemia

28-1 : Housewives

Nutrient	Total (250)	Age (Years)				Educational level				Annual income			NE participation			County	
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	High (105)	Low (142)	No answer (3)	Partici- pation in NE training (178)	Receiv- ing NE prints (152)	Listen to NE radio program (137)	NE county (200)	Control county (50)
Fat	11.6%	6.0%	14.5%	13.5%	- %	13.1%	8.8%	6.7%	- %	18.1%	9.5%	- %	12.4%	13.2%	12.4%	12.0%	10.0%
Carbohydrate	6.5	4.5	4.3	9.0	-	8.6	1.8	-	-	5.7	9.5	-	6.6	5.9	6.6	5.0	12.0
Protein	41.2	40.3	30.4	49.5	-	44.0	40.4	20.0	-	35.2	62.9	-	39.4	37.5	39.4	40.5	44.0
Iron	35.2	47.8	44.9	22.5	-	28.6	47.4	73.3	-	40.0	43.8	-	38.7	39.5	38.7	38.0	24.0
No answer	5.6	1.5	4.8	5.4	100.0	5.7	1.8	-	100.0	1.0	9.5	100.0	2.9	3.9	2.9	4.5	10.0

161

28-2 : Civil Defence Forces members

Nutrient	Total (132)	Age (Years)				Educational level				Annual income			NE participation		
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (64)	No answer (13)	High (62)	Low (57)	No answer (13)	Partici- pation in NE training (101)	Receiv- ing NE prints (88)	Listen to NE radio program (105)
Fat	9.1%	- %	6.5%	10.6%	16.7%	16.7%	12.0%	6.3%	- %	8.1%	10.5%	7.7%	7.9%	8.0%	11.4%
Carbohydrate	6.8	-	6.5	7.1	16.7	13.3	4.0	3.1	15.4	8.1	3.5	15.4	7.9	8.0	7.6
Protein	33.3	10.0	25.8	37.6	50.0	46.7	40.0	20.3	53.8	22.6	47.4	23.1	35.6	29.5	33.3
Iron	40.2	90.0	48.4	34.1	-	3.3	28.0	67.2	15.4	53.2	28.1	30.8	38.6	45.5	39.0
No answer	10.6	-	12.9	10.6	16.7	20.0	16.0	3.1	15.4	8.1	10.5	23.1	9.9	9.1	8.6

159

Appendix 29. Supplementary food supply for children

29-1 : Housewives

Response	Total (250)	Annual income			County		NE participations		
		Under 1.5 (mil.won) (142)	Over 1.5 (mil.won) (105)	No answer (3)	NE county (200)	Control county (50)	Participa- tion in NE training (178)	Receiv- ing NE prints (152)	Listen to NE radio program (137)
Yes	85.2%	82.4%	90.5%	33.3%	85.5%	84.0%	86.5%	86.2%	84.7%
No	9.2	11.3	5.7	33.3	10.0	6.0	9.0	9.9	9.5
No answer	5.6	6.3	3.8	33.3	4.5	10.0	4.5	3.9	5.8

29-2 : Civil Defence Forces members

Response	Total (132)	Annual income			NE participations		
		Under 1.5 (mil.won) (57)	Over 1.5 (mil.won) (62)	No answer (13)	Participation in NE training (101)	Receiving NE prints (88)	Listen to NE radio program (105)
Yes	83.3%	84.2%	88.7%	53.8%	80.2%	85.2%	83.8%
No	16.7	15.8	11.3	46.2	19.8	14.8	16.2

Appendix 30. Primary factor for selecting supplementary food

30-1 : Housewives

Factor	Total (213)	Annual income			County		NE participations		
		Low (95)	High (117)	No answer (1)	NE county (171)	Control county (42)	Participa- tion in NE training (154)	Receiv- ing NE prints (131)	Listen to NE radio program (116)
Taste	26.3%	26.3%	26.5%	- %	26.9%	23.8%	26.6%	24.4%	25.0%
Nutrition	54.9	56.8	53.0	100.0	59.6	35.7	60.4	61.8	57.8
Price	1.4	-	2.6	-	1.8	-	1.3	1.5	2.6
Satiety	9.9	8.4	11.1	-	6.4	23.8	6.5	6.9	9.5
Quick cooking	6.1	6.3	9.4	-	4.1	14.3	3.9	3.8	3.4
Others	1.4	2.1	2.6	-	1.2	2.4	1.3	1.5	1.7
No answer	-	-	-	-	-	-	-	-	-

163

161

30-2 : Civil Defence Forces members

Factor	Total (110)	Annual income			NE participations		
		Low (55)	High (48)	No answer (7)	Participation in NE training (81)	Receiving NE prints (75)	Listen to NE radio program (88)
Taste	7.3%	3.6%	10.4%	14.3%	7.4%	8.0%	5.7%
Nutrition	80.9	92.7	66.7	85.7	80.2	80.0	81.8
Price	2.7	1.8	4.2	-	3.7	4.0	3.4
Satiety	2.7	-	6.3	-	2.5	4.0	3.4
Quick cooking	2.7	-	6.3	-	2.5	1.3	2.3
Others	2.7	1.8	4.2	-	2.5	2.7	2.3
No answer	0.9	-	2.1	-	1.2	-	1.1

12/1

Appendix 31. Vulnerable group among family member toward nutrition and health

31-1 : Housewives

Group	Total (250)	Age (Years)				Educational level				Annual income			County		NE participations		
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	High (105)	Low (142)	No answer (3)	NE county (200)	Control county (50)	Participation in NE training (178)	Receiving NE Prints (152)	Listen to NE radio program (137)
Children, Pregnancy, Lactating women	50.4%	55.2%	50.7%	48.6%	- %	45.1%	59.6%	86.7%	- %	52.4%	50.0%	- %	56.0%	28.0%	56.2%	58.6%	55.5%
Adult (man)	28.8	22.4	26.1	35.1	-	32.6	24.6	6.7	-	25.7	31.7	-	30.0	24.0	30.3	28.9	27.0
Old man	19.6	22.4	23.2	16.2	-	22.3	15.8	6.7	-	21.9	18.3	-	12.5	48.0	12.9	11.8	17.5
No answer	1.2	-	-	-	100.0	-	-	-	100.0	-	-	100.0	1.5	-	0.6	0.7	-

165

31-2 : Civil Defence Forces members

Group	Total (132)	Age (Years)				Educational level				Annual income			NE participations		
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (64)	No answer (13)	High (62)	Low (57)	No answer (13)	Participation in NE training (101)	Receiving NE prints (88)	Listen to NE radio program (105)
Children, Pregnancy, Lactating women	79.5%	90.0%	83.9%	78.8%	50.0%	60.0%	72.0%	93.8%	69.2%	85.5%	75.4%	69.2%	72.2%	80.7%	79.0%
Adult (man)	3.0	-	3.2	1.2	33.3	6.7	-	-	15.4	1.6	5.3	-	4.0	3.4	3.8
Old man	12.9	-	6.5	17.6	-	20.0	24.0	6.3	7.7	8.1	17.5	15.4	12.9	10.2	12.4
No answer	4.5	10.0	6.5	2.4	16.7	13.3	4.0	-	7.7	4.8	1.8	15.4	5.9	5.7	4.8

163

Appendix 32. Accuracy of nutrition knowledge
(children in primary school)

Correct/incorrect question*	Total (100)	County		School year	
		NE county (50)	Control county (50)	5th grade (50)	6th grade (50)
Expensive food only could supply a balanced nutrition	95.0%	94.0%	96.0%	92.0%	96.0%
It's desirable to take whole fish including their bone in case of tiny fish such as anchovy which is a good source of minerals	2.0	4.0	-	8.0	-
Balanced nutrition came from balanced diets	1.0	1.0	-	-	1.3
Vegetable/fruits belong to Group II in Five Fundamental Food Groups	2.0	-	4.0	-	2.7

* Select one incorrect answer

167

Appendix 33. Drying/bottling of food for storage in home

Response	Total (250)	Age (Years)				Educational level				Annual income			NE participations			County	
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	High (109)	Low (142)	No answer (3)	Participation in NE training (178)	Receiving NE prints (152)	Listen to NE radio program (137)	NE county (200)	Control county (50)
Yes	77.6%	80.6%	79.7%	76.6%	- %	78.9%	75.4%	86.7%	- %	85.7%	73.2%	- %	81.5%	82.9%	75.9%	79.5%	70.0%
No	22.4	19.4	20.3	23.4	100.0	21.1	24.6	13.3	100.0	14.3	26.8	100.0	18.5	17.1	24.1	20.5	30.0

167

Appendix 34. Knowledge source for drying/bottling technique

Source (messenger)	Total (196)	Age (Years)				Educational level			Annual income		NE participations			County	
		20-29 (54)	30-39 (57)	Over 40 (85)	Primary school graduate (140)	Middle school graduate (43)	Over high school graduate (13)	High (90)	Low (106)	Participation in NE training (147)	Receiving NE prints (128)	Listen to NE radio program (105)	NE county (161)	Control county (35)	
MFM nutritionist	18.4%	18.5%	21.1%	16.5%	14.3%	27.9%	30.8%	17.8%	18.9%	19.7%	19.5%	24.8%	22.4%	- %	
Village leader	7.1	1.9	8.8	9.4	8.6	2.3	7.7	10.0	4.7	8.8	9.4	5.7	8.7	-	
ORD extension officer	31.6	22.2	31.6	37.6	34.3	25.6	23.1	24.4	37.7	30.6	33.6	27.6	29.2	42.9	
Mass media	5.1	11.1	1.8	3.5	2.1	9.3	23.1	5.6	4.7	6.1	5.5	6.7	5.6	2.9	
Traditional	27.8	46.3	36.8	32.9	40.7	34.9	15.4	42.2	34.0	34.7	32.0	35.2	34.2	54.3	

165

Appendix 35. Supplementary food prepared at home for children

35-1 : Housewives

Foods	Total (213)	Annual income			County		Participation in NE training		Receiving NE prints		Listen to NE radio program	
		No answer (1)	High (95)	Low (117)	NE county (171)	Control county (42)	Yes (154)	No (59)	Yes (131)	No (82)	Yes (116)	No (97)
Bread	70.9%	- %	73.7%	69.2%	70.8%	71.4%	72.7%	66.1%	71.8%	69.5%	77.6%	62.9%
Buchim	26.8%	-	28.4	25.6	25.7	31.0	27.3	25.4	25.2	29.3	23.3	30.9
Fry	17.4	-	18.9	16.2	18.1	14.3	18.2	15.3	17.6	17.0	19.0	15.5
Doughut	12.7	-	16.8	9.4	12.3	14.3	13.0	11.9	13.0	12.3	11.2	14.4
Korean-bread	9.9	-	7.4	12.0	9.9	9.5	9.7	10.2	8.4	12.3	9.5	10.3
Egg	6.6	-	4.2	8.5	7.0	4.8	6.5	6.8	6.9	6.1	9.5	3.1
Barely powder	4.2	-	3.2	5.1	4.1	4.8	4.5	3.4	5.3	2.4	1.7	7.2
Hot cake	2.8	-	4.2	1.7	3.5	-	3.9	-	4.6	-	2.6	3.1
Potato	3.3	-	2.1	4.3	4.1	-	4.5	-	5.3	-	3.4	3.1
Cake	3.8	-	3.2	4.3	4.1	2.4	4.5	1.7	2.3	6.1	5.2	2.1
Instant noddle	1.4	-	1.1	1.7	1.8	-	1.9	-	1.5	1.2	1.7	1.0
Bean products	1.9	-	4.2	-	2.3	-	1.9	1.7	1.5	2.4	2.6	1.0
Others	6.6	100.0	6.3	6.0	7.1	4.8	7.8	3.4	6.1	7.3	7.8	5.2
No answer	11.7	-	6.3	16.2	12.3	9.5	11.0	13.6	12.2	11.0	12.1	11.3

168

166

35-2 : Civil Defence Forces members

Foods	Total (110)	Annual income			Participation in NE training		Receiving NE prints	
		No answer (7)	Low (48)	High (55)	Yes (81)	No (29)	Yes (75)	No (35)
No answer	47.3%	71.4%	43.8%	30.9%	42.0%	31.0%	41.3%	34.3%
Bread	49.1	28.6	50.0	50.9	45.7	58.6	13.3	54.3
Egg	7.3	-	6.3	9.1	8.6	3.4	5.3	11.4
Fry	7.3	14.3	4.2	9.1	8.6	3.4	8.0	5.7
Buchim	6.4	-	4.2	9.1	7.4	3.4	6.7	5.7
Candy	6.4	-	4.2	9.1	6.2	6.8	9.3	-
Fruits	3.6	-	4.2	3.6	2.5	6.8	2.7	3.7
Barely powder	2.7	-	-	5.5	2.5	3.4	2.7	2.9
Milk	2.7	-	-	5.5	1.2	6.9	2.7	2.9
Others	11.8	14.3	10.4	14.6	14.8	3.4	13.3	8.6

Appendix 36. Supplementary food purchased for children

36-1 : Housewives

Products	Total (213)	Annual income			County		Participation in NE training		Receiving NE prints		Listen to NE radio program	
		No answer (1)	High (95)	Low (117)	NE county (171)	Control county (42)	Yes (154)	No (59)	Yes (131)	No (82)	Yes (116)	No (97)
No answer	20.2%	- %	20.0%	20.5%	19.3%	23.8%	20.8%	18.6%	19.1%	20.0%	19.0%	21.6%
Cake	30.5	100.0	28.4	32.5	28.1	40.5	25.3	44.1	26.0	37.8	24.1	38.1
Yoghurt	26.3	-	22.1	29.9	27.5	21.4	27.3	23.7	30.5	19.5	27.6	24.7
Bread	25.4	-	25.3	25.6	26.3	21.4	25.3	25.4	25.2	25.6	25.9	24.7
WoorangA	25.4	-	15.8	24.8	31.6	-	33.1	5.1	33.6	12.2	29.3	20.6
Milk	13.6	-	17.9	10.3	17.0	-	16.2	6.8	14.5	12.2	16.4	10.3
Candy	10.8	-	11.6	10.3	8.2	21.4	9.1	15.3	8.4	14.6	12.1	9.3
Fruits	10.3	-	10.5	9.4	8.2	19.0	7.8	16.9	8.4	13.4	10.3	10.3
Ice cream	9.4	100.0	10.5	8.5	11.7	-	9.8	8.5	9.9	8.5	8.6	10.3
Kongzoa	4.7	-	2.1	6.8	5.8	-	6.5	-	7.6	-	5.2	4.1
Gum	4.7	-	3.2	6.0	2.9	11.9	3.2	8.5	3.8	6.1	6.0	3.1
Soft drink	2.8	-	5.3	0.9	2.9	2.4	3.2	1.7	3.8	1.2	4.3	1.0
Others	2.8	-	4.2	1.7	2.9	2.4	3.2	1.7	3.1	2.4	3.4	2.1

170

12

36-2 : Civil Defence Forces members

Products	Total (110)	Annual income			Participation in NE training		Receiving NE prints	
		No answer (7)	Low (48)	High (55)	Yes (81)	No (29)	Yes (75)	No (35)
No answer	50.0%	57.1%	54.2%	45.5%	50.6%	48.3%	52.0%	45.7%
Bread	18.2	42.9	16.7	16.4	18.5	17.2	20.0	14.5
Milk	15.5	-	10.4	21.8	17.3	10.3	14.7	17.2
Cake	13.6	14.3	14.6	12.7	12.3	17.2	12.0	17.2
Fruits	10.0	14.3	6.3	12.7	8.6	13.8	8.0	14.3
Yoghurt	8.2	-	8.3	9.1	6.2	13.8	10.7	2.9
Candy	6.4	-	8.3	5.5	2.5	17.2	6.7	5.7
Ice cream	5.5	14.3	2.1	7.3	7.4	-	5.3	5.7
Egg	2.7	-	2.1	3.6	1.2	6.9	2.7	2.9
Others	2.7	-	4.2	1.8	3.7	-	2.7	2.9

171

169

Appendix 31. Paying the expenses for children's snack

37-1 : Housewives

Paying the expenses	Total (170)	Annual income			County		NE participations		
		High (77)	Low (92)	No answer (1)	NE county (138)	Control county (32)	Participa- tion in NE training (122)	Receiv- ing NE prints (105)	Listen to NE radio program (93)
Just give money to children for snack without any advice	19.4%	22.1%	17.4%	- %	18.8%	21.9%	19.7%	21.0%	20.4%
Give money to children with deciding the content of snack for purchasing	31.2	31.2	31.5	-	30.4	34.4	29.5	27.6	33.3
Buy the proper snack and serve it to children	45.9	44.2	46.7	100.0	46.4	43.8	46.7	48.6	40.9
Other	3.5	2.6	4.3	-	4.3	-	4.1	2.9	5.4

172

37-2 : Civil Defence Forces members

Paying the expenses	Total (110)	Annual income			NE participations		
		High (55)	Low (48)	No answer (7)	Participa- tion in NE training (81)	Receiving NE prints (75)	Listen to NE radio program (88)
Just give money to children for snack with out any advice	12.7%	12.7%	18.8%	14.3%	8.6%	14.7%	14.8%
Give money to children with deciding the content of snack for purchasing	54.5	49.1	58.3	71.4	55.6	50.7	54.5
Buy the proper snack and serve it to children	28.2	38.2	20.8	-	30.9	30.7	26.1
Other	4.5	-	8.3	14.3	4.9	4.0	4.5

170

Appendix 38. Washing hands before taking meal

38-1 : Housewives

Response	Total (250)	Age (Years)				Educational level				NE participations			County	
		20-29 (67)	30-39 (69)	Over 40 (111)	No answer (3)	Primary school graduate (175)	Middle school graduate (57)	Over high school graduate (15)	No answer (3)	Participation in NE training (178)	Receiving NE prints (152)	Listen to NE radio program (137)	NE county (200)	Control county (50)
Always washing	80.8%	79.1%	78.3%	84.7%	33.3%	78.3%	89.5%	86.7%	33.3%	83.7%	82.2%	82.5%	82.0%	76.0%
Frequently washing	18.0	20.9	18.8	15.3	33.3	20.6	10.5	13.3	33.3	15.7	17.1	17.5	17.0	22.0
No washing	0.8	-	2.9	-	-	1.1	-	-	-	0.6	0.7	-	0.5	2.0
No answer	0.4	-	-	-	33.3	-	-	-	33.3	-	-	-	0.5	-

173

38-2 : Civil Defence Forces members

Response	Total (132)	Age (Years)				Educational level				NE participations		
		20-29 (10)	30-39 (31)	Over 40 (85)	No answer (6)	Primary school graduate (30)	Middle school graduate (25)	Over high school graduate (64)	No answer (13)	Participation in NE training (101)	Receiving NE prints (88)	Listen to NE radio program (105)
Always washing	72.0%	70.0%	77.4%	71.8%	50.0%	80.0%	68.0%	68.8%	76.9%	72.3%	69.3%	74.3%
Frequently washing	27.3	30.0	19.4	28.2	50.0	20.0	28.0	31.1	23.1	26.7	29.5	24.8
No washing	-	-	-	-	-	-	-	-	-	-	-	-
No answer	0.8	-	3.2	-	-	-	4.0	-	-	1.0	1.1	1.0

171

Appendix 39. Drink water in home

39-1 : Housewives

Condition of drinking water	Total	Age (Years)				Educational level				NE participations			County	
		20-29	30-39	Over 40	No answer	Primary school graduate	Middle school graduate	Over high school graduate	No answer	Participation in NE training	Receiving NE prints	Listen to NE radio program	NE county	Control county
	(250)	(67)	(69)	(111)	(3)	(175)	(57)	(15)	(3)	(178)	(152)	(137)	(200)	(50)
Boiled water	37.2%	37.3%	39.1%	36.0%	33.3%	26.9%	61.4%	67.7%	33.3%	45.5%	44.7%	54.8%	12.0%	43.5%
Water without boiling	62.4	62.7	60.9	64.0	33.3	73.1	38.6	33.3	33.3	54.5	55.3	61.3	88.0	56.0
No answer	0.4	-	-	-	33.3	-	-	-	33.3	-	-	-	-	-

174

39-2 : Civil Defence Forces members

Condition of drinking water	Total	Age (Years)				Educational level				NE participations		
		20-29	30-39	Over 40	No answer	Primary school graduate	Middle school graduate	Over high school graduate	No answer	Participation in NE training	Receiving NE prints	Listen to NE radio program
	(132)	(10)	(31)	(85)	(6)	(30)	(25)	(64)	(7)	(101)	(88)	(105)
Boiled water	47.7%	50.0%	61.3%	42.4%	50.0%	30.0%	36.0%	59.4%	53.8%	46.5%	46.6%	46.7%
Water without boiling	49.2	40.0	38.7	54.1	50.0	66.7	60.0	39.1	38.5	49.5	51.1	50.5
No answer	3.0	10.0	-	3.5	-	3.3	4.0	1.6	7.7	-	2.3	2.9

172

Appendix 40. What foods were introduced for home production after
NE participation? (Housewives)

Foods	Participation in NE training		Receiving NE prints		Listen to NE radio program	
	Yes	No	Yes	No	Yes	No
Potato	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Sweet potato	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Bean	3 (2.9)	0	3 (3.3)	0	1 (1.5)	2 (5.1)
Kidney bean	3 (2.9)	0	3 (3.3)	0	3 (4.5)	0
Pea	2 (2.0)	0	1 (1.1)	1 (7.1)	1 (1.5)	1 (2.6)
Adzuki bean	6 (5.9)	0	5 (5.4)	1 (7.1)	3 (4.5)	3 (7.7)
Sesame	2 (2.0)	0	2 (2.2)	0	2 (3.0)	0
Perilla	9 (8.8)	0	8 (8.7)	1 (7.1)	7 (10.4)	2 (5.1)
Eggplant	3 (2.9)	0	2 (2.2)	1 (7.1)	1 (1.5)	2 (5.1)
Leaf-mustard	1 (1.0)	0	1 (1.1)	0	0	1 (2.6)
Sesame-leaf	5 (4.9)	2 (50.0)	4 (4.3)	3 (21.4)	5 (7.5)	2 (5.1)
Circinate	1 (1.0)	0	0	1 (7.1)	1 (1.5)	0
Red peper	10 (9.8)	0	10 (10.9)	0	6 (9.0)	4 (10.3)
Red peper leaf	5 (4.9)	0	5 (5.4)	0	1 (1.5)	4 (10.3)
Corrot	2 (2.0)	0	2 (2.2)	0	2 (3.0)	0
Codonopsis	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Balloon flower	1 (1.0)	0	0	1 (7.1)	0	1 (2.6)
Tomoto	5 (4.9)	0	5 (5.4)	0	2 (3.0)	3 (7.7)
Drop wort	1 (1.0)	0	1 (1.1)	0	0	1 (2.6)

175

13

(Continued)

Foods	Participation in NE training		Receiving NE prints		Listen to NE radio program	
	Yes	No	Yes	No	Yes	No
Garlic	1 (1.0)	1 (25.0)	0	2 (14.3)	2 (3.0)	0
Radish	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Cabbage	2 (2.0)	0	2 (2.2)	0	1 (1.5)	0
Leek	2 (2.0)	0	2 (2.2)	0	2 (3.0)	0
Lettuce	7 (6.9)	1 (25.0)	6 (6.5)	2 (14.3)	5 (7.5)	3 (7.7)
Green been spr	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Crown daisy	3 (2.9)	0	3 (3.3)	0	2 (3.0)	1 (2.6)
Mallow	4 (3.9)	0	4 (4.3)	0	2 (3.0)	2 (5.1)
Spinach	5 (4.9)	0	5 (5.4)	0	5 (7.5)	0
Onion	1 (1.0)	0	1 (1.1)	0	0	1 (2.6)
Cucumber	3 (2.9)	0	3 (3.3)	0	3 (4.5)	0
Welsh onion	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Pumpkin	1 (1.0)	0	1 (1.1)	0	0	1 (2.6)
Dried persimmon	1 (1.0)	0	1 (1.1)	0	0	1 (2.6)
Jujube	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Peach	1 (1.0)	0	1 (1.1)	0	1 (1.5)	0
Apple	1 (1.0)	0	1 (1.1)	0	0	1 (2.6)
Egg	4 (3.9)	0	3 (3.3)	1 (7.1)	2 (3.0)	2 (5.1)
Total	102 (96.2)	4 (3.8)	92 (86.8)	14 (13.2)	67 (63.2)	39 (36.8)

Remark: Figure means production frequency and figure in parenthesis is expressed as percentage

Appendix 41. Willingness for receiving NE prints in future (Housewives)

Responses	NE aids and materials			
	Pamphlet (120)	Poster (113)	Health chart (27)	Others (29)
Very much to receive	67.5%	58.4%	69.0%	55.2%
Would like to receive	24.2	31.9	20.7	24.1
No interest	3.3	8.0	10.3	17.2
Don't like to receive	4.2	0.9	-	3.4
Never to receive	0.8	0.9	-	-

177

125

Appendix 42. Willingness for participation on NE training

42-1 : Housewives

Response	Total (178)	Age (Years)					Educational level					
		20-29 (52)	30-39 (44)	40-49 (60)	Over 50 (21)	No answer (1)	Under primary school graduate (18)	Primary school graduate (103)	Middle school graduate (46)	High school graduate (9)	College graduate (1)	No answer (1)
Strongly to attend	66.3%	67.3%	65.9%	65.0%	66.7%	100.0%	61.1%	64.1%	73.9%	66.7%	- %	100.0%
Maybe to attend	27.0	23.1	27.3	30.0	28.6	-	33.3	28.2	21.7	33.3	-	-
No interest	6.2	7.7	6.8	5.0	4.8	-	5.6	7.8	2.2	-	100.0	-
Don't to attend	0.5	1.9	-	-	-	-	-	-	2.2	-	-	-
Never to attend	-	-	-	-	-	-	-	-	-	-	-	-

178

42-2 : Civil Defence Forces members

Response	Total (101)	Age (Years)					Educational level				
		20-29 (8)	30-39 (22)	40-49 (62)	Over 50 (3)	No answer (6)	Primary school graduate (24)	Middle school graduate (18)	High school graduate (34)	College graduate (12)	No answer (13)
Strongly to attend	54.5%	37.5%	54.5%	53.2%	100.0%	66.7%	62.5%	55.6%	55.9%	16.7%	69.2%
Maybe to attend	25.7	37.5	22.7	25.8	-	33.3	15.0	27.8	26.5	33.3	15.4
No interest	15.8	12.5	13.6	19.4	-	-	22.5	11.1	17.6	25.0	15.4
Don't to attend	4.0	12.5	9.1	1.6	-	-	-	5.6	-	25.0	-
Never to attend	-	-	-	-	-	-	-	-	-	-	-

176

Appendix 43. Degree of NE accomplishment carried out by MFM/Korea
(Social worker)

Response	Total (31)	Occupation			Educational level	
		Health centre staff (19)	Teacher (7)	Others (5)	High school graduate (24)	College graduate (7)
Very successful	9.7%	10.5%	14.3%	- %	12.5%	- %
Considerably successful	71.0	63.2	71.4	100.0	70.8	71.4
So so	19.3	26.3	14.3	-	16.7	28.6
Never successful	-	-	-	-	-	-

179

177

QUESTIONNAIRE
(For the Housewives)
(A Type)

Hello! I am from_____. We conducted nutrition education on the housewives in Wonseong County to promote your nutrition and health status during the last two years. Now we are conducting an evaluation of this nutrition education project. I would like to hear your opinion about it, and would appreciate very much for your cooperation.

(Questions for the housewives for Wonseong and Hyeongseong County)

Q 1A. Have you ever attend the nutrition education?

(Training)

No (2)

Yes (1)

1B. Have you ever received the printed materials about nutrition?

No (2)

Yes (1)

1C. Have you ever heard nutrition education broadcasting through radio?

No (2)

Yes (1)

178

(Stop interviewing for those who answered "No" to all questions of 1A-1C)

(For the housewives of Wonseong County only)

Question 2A-Question 2F are only for the housewives who answered "Yes" to question 1A. The "No"-answering housewives must be go to Question 3A.

Q) 2A. You have said you had experience of attending the nutrition education (training), how many times have you attend? _____ Times

2B. Was the content of the education/training difficult or easy?

- Very difficult (5)
- A little difficult (4)
- So so (3)
- A little easy (2)
- Very easy (1)

2C. In what degree was the content interesting?

- Very interest (5)
- A little interest (4)
- So so (3)
- Little interest (2)
- Never interest (1)

2D. In what degree the nutrition education gave help to actual dietary-life and health of family member?

- Very helpful (5)
- A little help (4)
- So so (3)

119

Little help ;..... (2)

Never help (1)

2E. Will you attend such nutrition education in the time to come, if it's conducted in this or neighboring village? In what degree are you eager of attending?

Very much to participate (5)

Would like to participate (4)

No interest (3)

Don't like to participate (2)

Never to participate (1)

2F. How do you think about the selection of the times, places for education?

Very good (3)

Not good or bad (2)

Very bad (1)

Q3A-Q3G are only for those who answered "Yes" to

Q1B. The "No"-answering housewives must go to Q4A.

Q 3A. You have said you had experience of receiving the printed materials, how many times so far? Times

3B. What kinds of materials you received?

Pamphlet times

Poster times

Health chart times

Others times

Total times

3C. In what degree have you read each nutrition education materials you received minutely?

180

	Pamphlet	Poster	Health chart	Other
Very much to read	(5)	(5)	(5)	(5)
A little to read	(4)	(4)	(4)	(4)
So so	(3)	(3)	(3)	(3)
Little to read	(2)	(2)	(2)	(2)
Never to read	(1)	(1)	(1)	(1)

3D. Were the contents of each material you received, easy or difficult?

	Pamphlet	Poster	Health chart	Other
Very difficult	(5)	(5)	(5)	(5)
A little difficult	(4)	(4)	(4)	(4)
So so	(3)	(3)	(3)	(3)
Little difficult	(2)	(2)	(2)	(2)
Never difficult	(1)	(1)	(1)	(1)

3E. In what degree was the content of each material interesting?

	Pamphlet	Poster	Health chart	Other
Very interest	(5)	(5)	(5)	(5)
A little interest	(4)	(4)	(4)	(4)
So so	(3)	(3)	(3)	(3)
Little interest	(2)	(2)	(2)	(2)
Never interest	(1)	(1)	(1)	(1)

3F. Do you wish to receive such materials hereafter?

	Pamphlet	Poster	Health chart	Other
Very much to receive ...	(5)	(5)	(5)	(5)
Would like to receive...	(4)	(4)	(4)	(4)
No interest	(3)	(3)	(3)	(3)
Don't like to receive...	(2)	(2)	(2)	(2)

181

Never to receive(1).....(1).....(1).....(1)

(For the housewives of both Wonseong and Hyongseong County)

Q4A-4F are only for those who answered "Yes" to Q1C. The "No"-answering housewives must go to Q5A.

- Q 4A. You said you had heard the nutrition education broadcasting through radio, how often have you heard it?
- Everyday (5)
 - 3-4 times/week (4)
 - 1-2 times/week (3)
 - 1-2 times/month (2)
 - Less than once in month (1)
- 4B. Was the content of that education-broadcasting easy? or difficult?
- Very difficult (5)
 - A little difficult (4)
 - So so (3)
 - A little easy (2)
 - Very easy (1)
- 4C. In what degree was the content of that broadcasting, interesting?
- Very interest (5)
 - A little interest (4)
 - So so (3)
 - Little interest (2)
 - Never interest (1)
- 4D. In what degree did that boradcasting give help to your actual dietary-life and health of family member?

182

- Very help (5)
- A little help (4)
- So so (3)
- Little help (2)
- Never help (1)

4E. In what degree are you going to listen to such broadcasting, if it will be continued in the times to come?

- Everyday (5)
- 3-4 times/week (4)
- 1-2 times/week (3)
- 1-2 times/month (2)
- Less than once in month .. (1)

4F. The time of nutrition education broadcasting in radio is

- Good, but too long (3)
- Good, but too short (2)
- Not suitable (1)

(For the housewives of Wonseong County only)

Q 5A. What was your attitude about attending MFM's nutrition education program?

- Felt necessity, so attended (4)
- In program, attended (3)
- Barely attended (2)
- Don't felt necessity, so not attended.. (1)

5B. From whom did you get most of nutrition informations you know, so far?

- Woman's club leader or NIC leader (6)

183

- ORD extension worker (5)
- Health Centre staff (4)
- County officials (3)
- MFM nutrionist (2)
- Nutritionist or professor .. (1)

Q 6A. Among the following foods, say what kind of food did you increase the amount of production, or begin to produce newly in your home after you had received nutrition education

- (1) Cereals ;
Rice(1), Barley(2), Wheat(3), Millet(4), Corn(5)
- (2) Potatoes;
Potato(6), Sweet potato(7)
- (3) Beans ;
Bean(8), Kidney-bean(9), Pea(10), Red bean(11),
Others(12)
- (4) Oils ;
Sesame(13), Perilla(14), Rapeseed(15), Others(16)
- (5) Vegetables;
Eggplant(17), Leaf-mustard(18), Circinate(19),
Royal fern(20), Red peper(21), Red peper leaf(22),
Sesame leaf(23), Water convuluolus(24), Chard beet
(25), Shepherd's purse(26), Allium(27), Corrot(28),
DuDuk(29), Ballon flower(30), Tomato(31), Bue of
a elata(32), Water cress(33), Garlic(34), Radish
(35), Cabbage(korean)(36), Leak(37), Lettuce(38),
Ginger(39), Greenbeen spr(40), Mugwort(41),
Garland chrysanthomum(42), Malva(43), Spinich(44),
Cabbage(45), Onion(46), Cucumber(47), Burdock(48),

184

Bambooshoot(49), CHYI boiled(50), Green onion(51),
Pumpkin(52), Others(53)

(6) Fruits ;

Persimmon(54), Dried persimmon(55), Strawberry(56),
Jujube(57), Wild grape(58), Pear(59), Peach(60),
Apple(61), Water-melon(62), Korean type cherry(63),
Plum(64), Musk melon(65), Grape(66), Others(67)

(7) Eggs ;

Egg(68), Duck-egg(69), Others(70)

(For Wonseong and Hyongseong Counties' housewives)

6B. What among the following food do you think most nutri-
tive staple foods in daily dietary-life of your family
members? Rice(1), Barley-rice(2), Soybean-rice(3), Red-
bean-rice(4), Noodle(5), Instant noodle(6), Suzabe(7)

6C. Usually, do you wash your hands, before taking meals?

Always (3)

Frequently washing (2)

No washing (1)

6D. In what condition do you drink water in your home?

Boiled water (2)

Water without boiling.. (1)

6E. If you serves a snack between meals to your children,
what is it?

At home : _____ (1) _____ (2) _____ (3)

At store: _____ (4) _____ (5) _____ (6)

No supply: _____ (7)

185

- 6F. If you are paying the expenses of a snack to your children, you pay without deciding the content of a snack (4)
 pay with deciding the content of a snack (3)
 Buy the food you want to give and serve it to children (2)
 Other (say in detail) (1)

- 6G. What do you regard as the most important thing in reflection of your snack?
 Taste (6) Satiety (3)
 Nutrition (5) Quick cooking .. (2)
 Price (4) Other (1)

Q 7A. Next, I want to ask you about the process-preservation

- (1) Do you often practice the drying of food or bottling for preservation?
 Yes (2)
 No (1)
- (2) From whom have you learned the bottling method?
 MFM nutritionist (4)
 Village leader (3)
 ORD extension worker (2)
 Mass media (1)

- 7B. The bean-soup or bean sprouts are?
 Served as home-made/cultivated, often ... (3)
 Served as purchased, often (2)
 Not served (1)

Q 8A. The protein is the nutrition element that promote bodygrowth, makes the brain well-developed, produces blood, in what among the following food is contained

186

the protein most abundantly?
 Fruits and Vegetable (4)
 Cider and Cola (3)
 Candy (2)
 Milk and Soybean (1)

8B. Who are vulnerable group among the following family members, generally?

Children, pregnancy and lactating woman ... (3)
 Adult (male) (2)
 Old man (1)

8C. What do you think is the most proper period to wean your child?

4-6 months (4)
 1 yr after (3)
 1-2 yr (2)
 Over 2 yr (1)

8D. What do you think is the most disirable method of rice - washing to prevent the loss of nutritive elements?

Slightly 2-3 times (2)
 Heavily several times (1)

8E. What is the nutritive element the shortage of which easily results in anemia?

Iron (4)
 Protein (3)
 Cabohydrolate (2)
 Fat (1)

Q 9A. Age years old

- 9B. Educational level?
- Primary school graduate .. (4)
 - Middle (3)
 - High (2)
 - College (1)
- 9C. Family members? _____ (person)
 Number of preschool children _____ (person)
- 9D. Occupation?
- Farming(1), Mercant(2), Government official(3),
 - Other(4)
- 9E. Annual average income?
- under 1,000,000 Won (5)
 - 1,000,000-1,500,000 Won (4)
 - 1,510,000-2,500,000 Won (3)
 - 2,510,000-3,500,000 Won (2)
 - Over 3,510,000 Won (1)
- 9F. Paddy field owned pyong
- 9G. Dry field owend pyong
- 9H. Others pyong

- Thank you -

188