

# A Study on School Health Activities through a Fact-finding Survey in Korea

Yung Hoo Kyung and Myung Ho Kim

*Department of Preventive Medicine and Public Health, Yonsei University College of Medicine  
Seoul, Korea*

Aiming to understand the actual grass roots of school health activities in Korea, a fact-finding survey was carried out through mailing between 1978-1979 and the study results were summarized as follows:

76.4% of school nurses were less than 30 years old and 58.5% were single. 76.4% of nurses graduated from junior nursing colleges 74.5% and 64.8% were not well oriented in their new jobs. Therefore 59.2% of surveyed schools had small size clinics (less than 355 square feet). Physical examination for pupils were carried out by general practitioners mostly (70.0%). However, the follow-up was done by nurses satisfactorily.

Supportive and positive attitudes toward school lunch were different between school principals (35.0%) and classroom teachers (84.5%) in the schools. Principals criticized school lunch program as not helpful for the growth and development of school children (71.0%) and as a waste of budget (18.2%). 52.4% of principals and 31.5% of teachers respectively explained that school lunch should be provided for all pupils on the one hand and on the other hand 28.7% of principals and 34.3% of teachers gave an other opinion which was provision only for those pupils wanting a lunch.

Advantages of school lunch : convenient to eat (42.2%), tasteful food (29.6%) were pointed out and the disadvantages: food is of poor quality (40.3%), not tasteful (32.6%) were also pointed out.

In the comparative study between the school lunch demonstration school and the control school (non-school lunch demonstration school and the control school (non-school lunch), height and weight increase of school children and serum protein level were different: however, these facts were either not significant or of minimal significance.

In short, the path towards obtaining effective and desirable health services in Korea, of which the school lunch program is only part, is long and arduous and it will require patience and effort to realize this goal.

---

**Key Word:** School Health

The school health program has been gradually recognized as one of the most important fields

of public health after the program had grown into an independent field being a part of maternal and child health since the beginning of the 20th century.

However, school health is yet one of the weakest parts in the public health field as a whole for many reasons such as the lack of interests and recognition of the importance of the program by administrators, education personnel, parents and students even health personnel; weak structure and organization of the program and insufficient budget etc (Kim, 1978).

Therefore generally speaking, the school health program has not been satisfactorily implemented in any country even though many scholars have emphasized that the concept of the school health program implies teaching and guiding students to become healthy students and citizens, fully developed physically, mentally, morally and socially (Johns, 1970).

The history of school health in Korea has not been of sufficient duration for any chance of success. Initially, the program was implemented actively when the School Health Law was first promulgated in 1967. It is not deniable that research, education and training, and effective administration are absolutely necessary in order to carry out a better and more effective program. However, very few scholars are interested in the field up to present. In this sense, the author intended to carry out this study. The aim of this study is to understand the actual grass roots of school health activities. Therefore according to this aim, school health status in general was surveyed through observing nursing activities as the most urgent health problems in the school were surveyed. Finally, the school lunch program in the demonstration school as the important influential factor in growth and development of children was checked.

## METHODS

The study was designed and carried out between Oct. 1978-Sep. 1979(for one year) using the following methods;

- 1) mailing survey with questionnaire forms for randomly sampled 200 nation-wide schools where school nurses are working out of total of 6,408 elementary schools in order to study health services as the school nurse takes place as the most important position in implementation of school health program (Survey A).
- 2) mailing survey for randomly sampled 200 nation-wide schools without regard to nurses out of a total of 6,408 elementary schools in order to study the current school lunch program (Survey B).
- 3) assessing the effect of school-feeding, measurement of height and weight, blood tests and clinical observation of schoolchildren in both school lunch demonstration school (School A) and the control school(School B) were carried out for two-year study period of time(1976-1977) in order to find out any difference in growth and development of schoolchildren(Survey C).
- 4) for incompletely responded schools in the mailing survey, school visitation was done for the better obtaining data.

## RESULTS

For Survey A concerning health services, questionnaire forms were sent to 200 elementary schools with 176 schools responding and for Survey B concerning the school lunch program 143 schools out of 200 responded.

### 1) School Health Service Survey

In the Survey A concerning the school health service, location and size of schools, nurses' general characteristics, education and professional experiences, health clinic in the school, health appraisal and services, were observed:

#### (1) Location and size of surveyed schools:

Aiming to understand school status in general, several aspects of survey schools were checked as

follows:

Location of schools were found mostly in semi-urban areas (Table 1). 67.1% of schools had less than 29 classes (Table 2) and 45.5% of schools had between 1,000-1,499 pupils at the most (Table 3). 56.0% of the schools had teachers between 20-29 at the most (Table 4).

**Table 1. Location of surveyed schools by community characteristics**

Location of schools	Number of schools	%
Urban	40	22.7
Semi-urban	123	69.9
Rural	13	7.4
<b>Total</b>	<b>176</b>	<b>100.0</b>

**Table 2. Number of classes of surveyed schools**

Number of classes in each school	Number of schools	%
Less than 19	41	23.4
20-29	77	43.7
30-39	22	12.5
40-49	16	9.1
More than 50	20	11.3
<b>Total</b>	<b>176</b>	<b>100.0</b>

**Table 3. Number of pupils of surveyed schools**

Pupils in each school	Number of schools	%
Less than 499	2	1.1
500- 999	33	18.7
1,000-1,499	80	45.5
1,500-1,999	17	9.7
2,000-2,499	16	9.7
More than 2,500	28	15.9
<b>Total</b>	<b>176</b>	<b>100.0</b>

(2) **School health nurses:** Because of school nursing activity as the important part of school health service, some influential factors such as

**Table 4. Number of teachers of surveyed schools**

Number of teachers in each school	Number of schools	%
Less than 19	7	4.0
25-29	100	56.0
30-34	29	16.5
35-39	17	9.7
More than 50	23	13.0
<b>Total</b>	<b>176</b>	<b>100.0</b>

**Table 5. Distribution of school nurses by age**

Age	Number of nurses	%
Under 24	72	40.7
25-29	63	35.7
30-34	11	6.3
35-39	26	15.0
Above 40	4	2.3
<b>Total</b>	<b>176</b>	<b>100.0</b>

**Table 6. Marital status of school nurses**

Status	Number of nurses	%
Single	103	58.5
Married	73	41.5
<b>Total</b>	<b>176</b>	<b>100.0</b>

**Table 7. Educational background of school nurses**

Education	Number of nurses	%
College and over	15	8.5
Junior nursing school	131	74.5
Technical nursing high school	30	17.0
<b>Total</b>	<b>176</b>	<b>100.0</b>

ages, marital status, education and experiences in school health in relation to school nurses were observed as follows:

Through compiling data on this recent survey on the qualification of school nurses, we discovered that 76.4% were less than 30 years old (Table 5), 58.5% were single (Table 6), 74.5% were graduates of junior nursing school (3 year education system) (Table 7). 64.8% were working in the school health field without preliminary training just after their graduation from nursing schools (Table 8). However, this was alleviated by the fact that 73.6% had already had training in the school health program for more than 3 years (Table 9).

**Table 8. Number of school nurses by duration of clinical experiences**

Clinical experiences (year)	Number of nurses	%
None	114	64.8
Less than 2	39	22.2
3-4	18	10.2
More than 5	5	2.8
Total	176	100.0

(3) **Health clinic in schools:** Health clinic in general was not properly provided in the school. 76.2% of surveyed schools had prepared health clinics, however, only 44.4% of schools had prepared for exclusive use of the clinic (Table 10).

**Table 9. Number of nurses by duration of school health experiences**

Experiences in school health (year)	Number of nurses	%
Less than 2	37	26.4
3-4	66	47.2
5-6	5	3.6
More than 7	32	22.8
Total	176	100.0

**Table 10. Health clinic status in schools**

Health clinic	Number of schools	%
Not prepared yet	24	13.6
Prepared but inclusive use	56	31.8
Prepared and exclusive use	78	44.4
No response	18	10.2
Total	176	100.0

Most schools established health clinic without a little consideration about the size of the school population. 59.2% of surveyed schools had small size clinics (less than 35.5 square ft.) and 35.9% had between 35.5-70.9 square ft. respectively (Table 11).

(4) **Health appraisal:** A mandatory physical examination as an important program in school health services was carried out once a year in

**Table 11. Size of health clinic by number of pupils**

Number of Size pupils (35.5 square ft.)	less than 1,000	1,000-2,000	2,000-3,000	over 3,000	total
Less than 355	8(61.5)	35(53.8)	7(63.6)	11(78.6)	61(59.2)
355-709	4(30.8)	26(40.0)	4(36.4)	3(21.4)	37(35.9)
Over 710	1( 7.7)	4( 6.2)	0( 0.0)	0( 0.0)	5( 4.9)
Total	13(100.0)	65(100.0)	11(100.0)	14(100.0)	103(100.0)

$\chi^2 = 4.1$  d.f. = 6  $p > 0.05$  ( ) : percent

Table 12. Size of health clinic by emergency cases

Cases/wk Size (35.5 square ft.) of clinic	Cases/wk			total
	less than 19	20-39	over 40	
Less than 355	12(30.8)	6(25.0)	8(44.4)	26(32.1)
355-709	19(48.7)	8(33.3)	8(44.4)	35(43.2)
Over 710	8(20.5)	10(41.7)	2(11.2)	20(24.7)
Total	39(100.0)	24(100.0)	18(100.0)	81(100.0)

$X^2 = 6.5$  d.f. = 4  $p > 0.05$  ( ) : percent

Table 13. Number of times of physical examination a year

Number of times a year	Number of schools	%
Once	158	89.7
Twice	12	6.8
Three times	6	3.5
Total	176	100.0

Table 14. By whom physical examination was carried out ?

Examined by	Number of schools	%
School physician (Private practitioner)	123	70.0
Health center doctor	36	20.4
Clinician	17	9.6
Total	176	100.0

Table 15. Follow-up done after physical examination

Follow-up	No. of school (%)			
	Vision test	Dental examination	Tuberculin test	Stool examination
No follow-up	18(10.2)	11( 6.3)	11( 6.3)	4( 2.3)
Notice to classroom teacher	90(51.1)	76(42.2)	93(52.8)	103(58.5)
Notice to parents	96(54.6)	91(51.7)	147(83.5)	115(65.3)
Counseling	92(52.3)	95(54.0)	84(47.7)	73(41.5)
Refer to school physician	12( 6.8)	31(17.6)	33(18.8)	6( 3.4)

the almost schools (89.7%) (Table 13).

Correlation between the size of health clinic and number of emergency cases visiting the clinic in a week was not significantly correlated (Table 12).

In 70% of the total schools, school physicians (private practitioners) carried out the physical examination and the rest of schools were done by health center doctors (20.4%) and clinicians in the hospital (9.6%) respectively (Table 14).

Follow-up activities after physical examination were shown as following Table 15:

The more the schools informed the parents for the pupils' vision test(54.6%), tuberculin test(83.5%) and stool examination(65.3%) on one hand, on the other hand the more schools carried out counseling for dental examination of pupils.

In 92.1% of survey schools medical record of physical examinations was written by the classroom teacher most and in the rest of the schools by the school nurses and sometimes even by students(Table 16 ).

Unfavorite reasons for difficulties in carrying out school health services, 25.0% of survey schools pointed out "lack of clinic equipment as

Table 16. By whom medical record was written?

Written by	Number of schools	%
School nurse	8	4.5
Class-room teacher	162	92.1
Student	6	3.4
Total	176	100.0

Table 17. Reasons for difficulties related with school health services

Reason for difficulties	Number of school nurses	%
1. Poor in clinic equipments	44	25.0
2. Poor understanding on school health services	28	15.9
3. Duplication with other affairs	16	9.0
4. Lack of financial support	14	8.0
5. Poor referral system	7	4.0
6. Others	11	6.3
7. Did not respond	56	31.8
Total	176	100.0

the greatest handicap" followed by "poor understanding on school health services" for 15.9% (Table 17).

## 2) School Lunch Survey

In school lunch survey (Survey B) principals, teachers (6th grade) and pupils (50 each from the 4,5,6th grades) in the sampled schools were asked the same questions and the following data were obtained:

(1) Attitude toward school lunch: Attitude toward school lunch between principals and teachers was different as the following table 18 illustrates:

It was shown in  $X^2$  test that proportions between the groups are significantly different. 65.0% of principals had negative attitude toward school lunch in contrast to 15.5% of teachers. The reasons why school lunch was considered

Table 18. Attitude toward school lunch by principals and teachers

Is school lunch program necessary?	Principals		Teachers	
	Number	%	Number	%
Yes	50	35.0	147	84.5
No	93	65.0	27	15.5
Total	143	100.0	174	100.0

$$X^2 = 81.812 \quad d.f. = 1 \quad p < 0.005$$

Table 19. The reason explained by school principals why school lunch is not necessary

Reasons why school lunch is not necessary	Number	%
Does not help the growth and development of pupils substantially	66	71.0
Pupil's living standard is already improved	6	6.4
Wasting budget	17	18.2
Others	5	5.4
Total	93*	100.0

\* This number from Table 18.

as not necessary were shown by principals as follows:

In the above table, 71.0% of principals thought that the school lunch program did not help growth and development of pupils significantly and further, even 18.2% of principals thought critically as the school lunch program was a waste of money.

(2) Coverage of school lunch program: Principals and teachers were then asked respectively as to whom should be the beneficiaries of the school lunch programs as their desires:

Table 20. Principals' opinion(to whom school lunch should be provided)

To whom	Number	%
All of pupils	75	52.4
Pupils wanting	41	28.7
Lower grade (1st-3rd) only	7	4.9
Higher grade (4th-6th) only	20	14.0
Total	143	100.0

Table 21. Teachers' opinion(to whom school lunch should be provided)

To whom	Number	%
All of pupils	45	31.5
Pupils wanting	35	24.5
Lower grade (1st-3rd) only	14	9.7
Higher grade (4-6th) only	49	34.3
Total	143	100.0

52.4% of principals in survey schools explained that the school lunch program should be provided for all of pupils in the school (Table 20). However, only 31.5% of teachers expressed similar opinions (Table 21). 28.7% of principals (Table 20) and 34.3% of teachers (Table 21) explained in the passive way as such the program should be provided only for pupils wanting.

(3) Distribution of school lunch frequency: Between the distribution frequency of the current program and the desirable frequency the difference was not that great. 41.9% of sampled schools currently provide school lunch 5-6 times a week and 60.8% of schools desired the same frequency. In  $X^2$  test the distribution of the proportions among the groups are significantly different (Table 22).

Table 22. Number of times provided school lunch a week

Number of times a week	Current		Desiring	
	Number of schools	%	Number of schools	%
Once-twice	26	18.2	32	22.4
Three-four times	57	39.9	24	16.8
Five-six times (everyday)	60	41.9	87	60.8
Total	143	100.0	143	100.0

$$X^2 = 19.024 \quad d.f. = 2 \quad p < 0.01$$

(4) Facilities for school lunch: It also came to light that the school lunch facilities were woefully inadequate especially the kitchen and dining room. They were not sufficiently equipped as follows:

Table 23. School lunch facilities

Facility	Kitchen		Dining room	
	Number	%	Number	%
Equipped	61	42.7	9	6.3
Not equipped	82	57.3	134	93.7
Total	143	100.0	143	100.0

$$X^2 = 51.147 \quad d.f. = 1 \quad p < 0.005$$

Proportions between the two groups are significantly different.

(5) **Provision of menu of school lunch:** Even though the Ministry of Education suggested the ideal menu of school lunch, however, the content of menu was diverse depending upon such factors as financial condition, local agricultural products, distance between the school and market etc.

The most important factor in the provision of the menu turned out to be the person in charge of the menu.

Table 24. Provision for school lunch menu

Responsible man for menu	Number of schools	%
Nutrition teacher	103	72.0
School nurse	22	15.4
Science teacher	3	2.1
Principal	3	2.1
Associate principal	3	2.1
Woman teacher	3	2.1
Parents	3	2.1
Others	3	2.1
Total	143	100.0

Table 25. Opportunity as educational guidance at school lunch

Subjects for guidance (teaching)	Number of school	%
Food habit improvement	16	11.2
Nutrition	44	30.8
Meal manner	19	13.2
Lunch singing	12	8.4
Food sanitation	14	9.8
Health education	11	7.7
Mixture food	10	7.0
Grace to food	7	4.9
Correction of unbalanced food	10	7.0
Total	143	100.0

At the present school dieticians were appointed in limited number of schools, therefore, nutrition teacher mostly provided menu in 72.0% of schools (Table 24).

(6) **School lunch provided as an educational opportunity:** Many teachers sought to incorporate the school lunch hour into the curriculum from an educational point of view. In this survey teaching or guidance in school lunch hour was considered as follows:

(7) **Advantages of school lunch:** Certain advantages of a school lunch were voiced by selected pupils as follows:

Table 26. Voiced advantages of school lunch by pupils

Advantageous comment	Number of school	%
Convenient	479	42.2
Tasteful	335	29.6
Helpful for better health	162	14.3
Food is warm	97	8.6
Save money	39	3.4
Be able to join with friends	15	1.3
Balanced food with mixture corps	7	0.6
Total	1,134	100.0

\* At 10 schools out of 200 survey schools

(8) **Disadvantages of school lunch:** A very small minority of pupils expressed their disapproval of school lunch as follows:

3) **Observation on growth and development of schoolchildren in the school lunch demonstration school.**

Intending to find out any significant effect on the growth and development of schoolchildren, the survey was conducted at one out of fifty-five school lunch demonstration schools throughout the country as the experimental school and at the control school located nearby

Table 27. Disadvantages of school lunch by pupils

Disadvantageous comment	Number of pupils	%
Less quality of meal	89	40.3
Less nutritious	23	10.4
Not-tasteful	72	32.6
Expensive	2	0.9
Complicated in meal time	5	2.3
Friends want other's food	15	6.8
Drinks is not adequately provided	15	6.8
Total	221	100.0

\* At 10 schools out of 200 survey schools

the experimental school during the two-year (1976-1977) (Survey C). Height and weight measurements, clinical observation for nutritional deficiency and blood tests such as hemoglobin, hematocrit and serum protein levels

were checked. Analyses with these tests and examinations were done for 150 students selected randomly at the beginning of the program and 2 years after the program was implemented.

The results were shown as follows:

- 1) The amount of increase of height and weight were greater in the experimental school than in the control school, however, the differences were not statistically significant (Table 28, 29 . Fig. 1-8).
- 2) Signs of vitamin deficiency decreased in both experimental and control schools during the two-year program period.
- 3) At the time of 1977 post-survey, value of hemoglobin and hematocrit revealed no significant differences between the two schools, however, serum protein level was a little higher in the experimental school than in the control school (Table 30).

Table 28. Comparison of height of children in two schools by year

Age	School A				School B			
	1976		1977		1976		1977	
	M	F	M	F	M	F	M	F
7	117.0	119.1	115.8	117.6	124.1	116.9	115.3	117.7
	±2.68	±4.53	±3.11	±3.11	±9.97	±4.38	±3.82	±4.22
8	119.6	119.1	119.4	117.8	121.8	118.4	117.5	120.7
	±1.85	±4.98	±5.42	±4.58	±5.25	±4.89	±2.90	±6.58
9	123.9	121.6	122.3	122.5	125.1	124.7	122.1	122.5
	±5.04	±5.13	±4.65	±5.24	±5.85	±4.68	±5.50	±5.25
10	126.5	126.6	125.7	125.9	127.9	128.2	126.6	126.9
	±4.56	±5.01	±4.88	±5.34	±5.55	±5.64	±6.37	±6.76
11	129.5	134.3	132.9	134.7	131.1	131.9	130.3	130.9
	±5.73	±6.54	±4.99	±4.85	±6.81	±6.75	±6.26	±6.77
12	136.0	138.8	135.9	137.8	137.4	137.3	134.6	135.5
	±6.93	±9.06	±6.08	±7.43	±6.03	±6.03	±5.51	±6.11
13	137.4	143.7	135.4	137.6	138.9	133.1	137.1	141.7
	±10.62	±5.07	±4.82	±6.07	±5.88	±4.17	±5.87	±8.05

(unit Cm, ± S.D.)

Table 29. Comparison of weight of children in two schools by year

Age	School A				School B			
	1976		1977		1976		1977	
	M	F	M	F	M	F	M	F
7	21.1 ±1.28	26.4 ±2.20	19.8 ±2.19	19.7 ±2.51	25.6 ±5.92	21.8 ±1.64	19.5 ±1.94	19.4 ±2.44
8	21.4 ±1.79	26.9 ±2.36	21.2 ±3.37	20.5 ±2.31	23.5 ±2.64	22.1 ±1.11	20.5 ±1.95	21.1 ±3.27
9	23.7 ±2.12	24.0 ±1.94	23.0 ±2.41	23.0 ±2.5	24.4 ±2.70	22.8 ±2.01	23.1 ±2.69	23.2 ±2.82
10	24.6 ±2.60	25.2 ±3.36	25.3 ±2.57	24.7 ±2.93	26.4 ±3.82	27.2 ±2.98	25.3 ±3.28	24.9 ±2.85
11	28.1 ±3.34	29.4 ±5.42	28.9 ±3.09	29.1 ±3.58	28.7 ±4.20	30.8 ±3.91	27.7 ±3.64	27.5 ±3.71
12	30.1 ±3.46	30.3 ±4.62	30.5 ±3.38	31.2 ±4.60	31.2 ±2.92	32.1 ±5.71	30.7 ±3.5	29.2 ±3.87
13	29.7 ±2.71	28.2 ±2.92	30.0 ±2.86	31.8 ±6.09	33.5 ±5.04	35.7 ±3.81	31.6 ±5.09	35.0 ±6.06

(Unit : Kg ± S.D.)

Table 30. Comparison of blood test results by age of schoolchildren in two schools by year

exam school age	Serum prot. gm/dl		haematocrit %		Hb gm %	
	A	B	A	B	A	B
	7	7.65±3.5	7.75±3.3	38.6±2.7	37.7±4.6	12.8±8.5
8	7.60±9.5	7.77±3.9	38.0±1.7	39.1±2.2	12.6±6.0	12.8±7.1
9	7.89±3.8	7.92±2.8	40.1±6.9	39.1±1.6	12.7±11.3	12.8±7.9
10	7.81±0.2	7.95±3.9	38.4±2.1	38.9±1.9	12.7±6.9	12.5±7.5
11	8.02±5.7	7.57±87	37.8±3.0	38.9±1.9	12.5±7.7	12.8±8.4
12	7.97±4.0	7.78±5.2	37.9±3.0	39.8±2.0	12.4±10.8	12.9±8.0
13	7.42±6.4	7.80±5.2	38.6±2.6	39.5±3.2	13.0±9.5	12.9±8.3

## DISCUSSION

According to the result of the study on health service (Survey A) certain points such as the school nurse as an important health

personnel in school, health clinic facilities and activities, health appraisal and follow-up as one of functions of health services are discussed with reviewing in this field (Kang and Byun, 1978).

According to the statistical report on the results of the annual physical examination

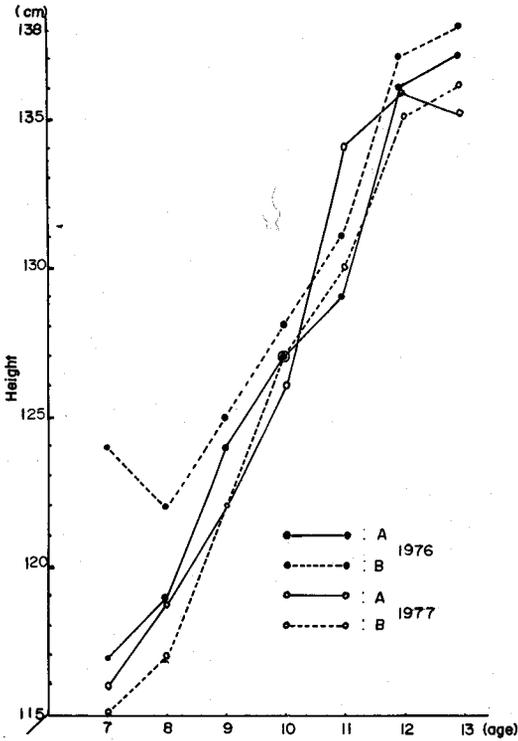


Fig. 1. Comparison of height of children in two schools by age and year for male.

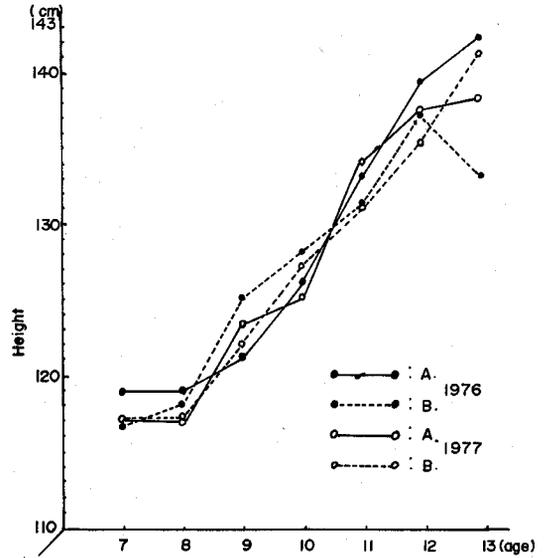


Fig. 3. Comparison of height of children in two schools by age and year for female.

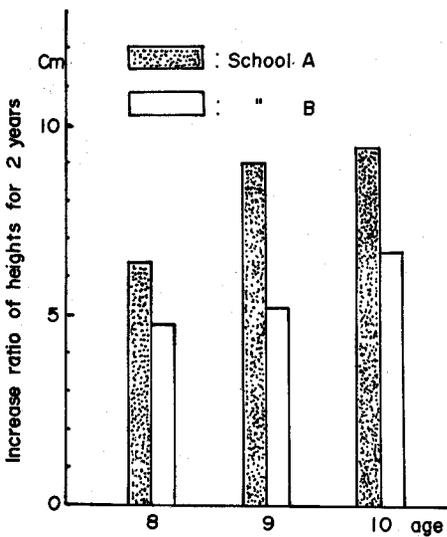


Fig. 2. Increase ratio of heights for two years by age in male children in two schools.

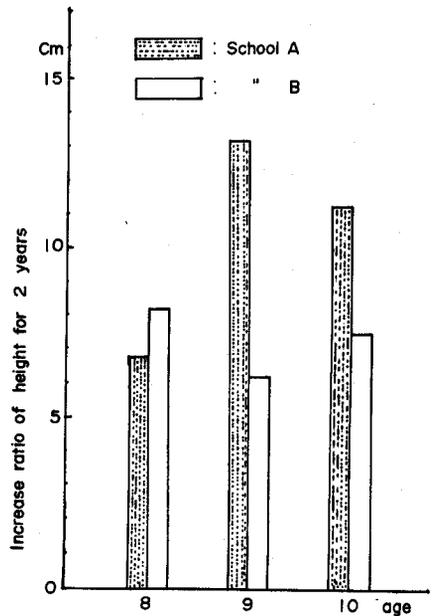


Fig. 4. Increase ratio of heights, for two years by age in female children in two schools.

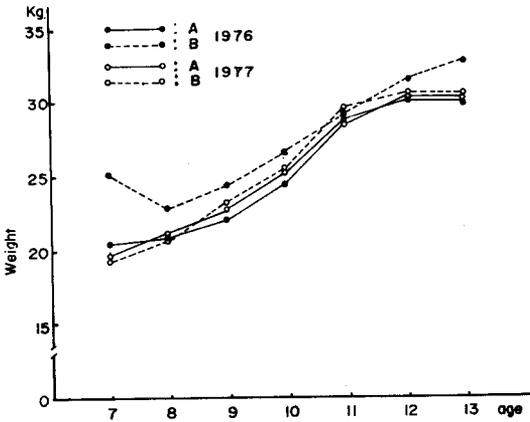


Fig. 5. Comparison of weight of children in two schools by age and year for male.

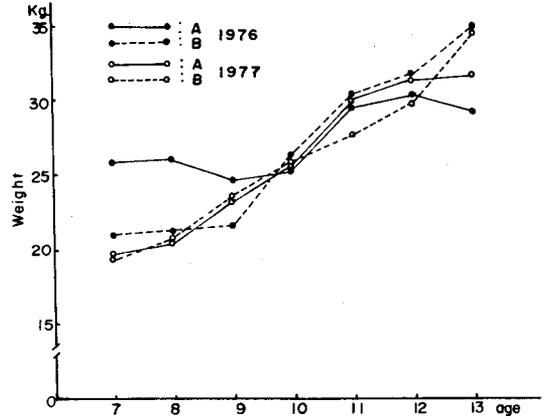


Fig. 7. Comparison of weight of children in two schools by age and year for female.

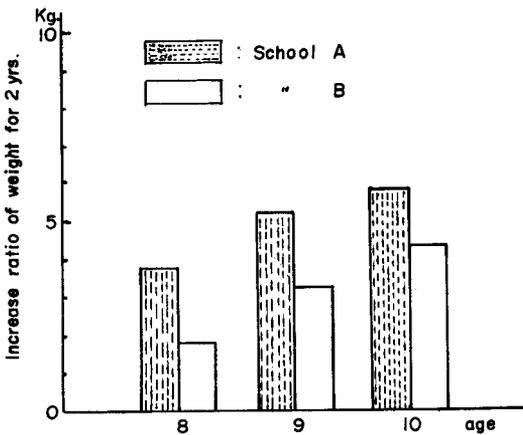


Fig. 6. Increase ratio of weights for two years by age in male children in two schools.

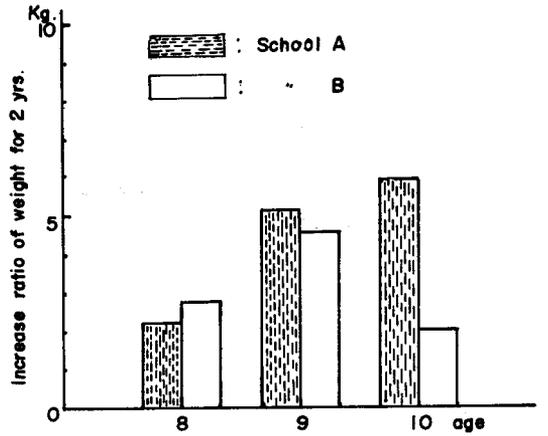


Fig. 8. Increase ratio of weights for two years by age in female children in two schools.

for total elementary school pupils in 1977, the leading causes of morbidity were dental caries(21.2% in boys; 33% in girls); myopia (2.1% in boys; 2.8% in girls), tonsile hydrophia (1.5% in boys; 1.8 in girls) and otitis mediae (0.6% in boys; 0.5% in girls). A total of 6.4% of boys and 5.4% of girls were sick with one or more defects or diseases(Ministry of Education, 1973, 1977).

Therefore in reality, demand for health services in schools is great. However, today

the shortage of school nurses is one of the most serious problems, and actual distribution of nurses shows in Table 31. There were only 1,026 nurses in 6,429 schools nation-wide in 1978(Kim, 1979).

In addition to the shortage of nurses, the educational background of the school nurse was not found to be satisfactory as depicted as shown in Table 7. Thus 8.5% of the nurses had graduated from 4-year nursing colleges, 74.5% from 3-year junior nursing colleges (after

Table 31. Distribution of nurses in the elementary school (1978)

Cities and Provinces	Number of schools	Number of nurses	%
Seoul	271	233	85.9
Busan	128	49	38.3
Kyonggi	719	76	10.6
Kangwon	621	54	8.7
Choongbuk	394	51	12.9
Choongnam	682	88	12.9
Jeonbuk	601	102	16.9
Jeonnam	1,002	208	20.8
Kyongbuk	1,039	160	15.4
Kyongnam	889	—	0
Jaeju	113	5	4.4
Total	6,459	1,026	15.9

high school graduation) and 17.0% from 3-year nursing high schools respectively.

Looking at another aspect, the author discovered that in spite of the size of the school (some had more than 50 classes) only one nurse was assigned in any school with the shortage of budget. Therefore, nursing activity in the school could not reach a satisfactory depth. It became quite evident that nursing could not develop to its full potential in this environment.

In the other hand, the almost all schools have nominally appointed school physicians. With another words school physicians carried out only physical examination mostly once a year (Table 13). This fact was discovered in several studies as health services by school physicians were very limited(Kim, 1978).

Further observation of the backgrounds of school physicians revealed that 79.6% of them were general practitioners or clinicians who were deficient in knowledge on school health and the rest were health center doctors who had insufficient knowledge of clinical medicine

(Table 14).

For optimum health services, the follow-up activities after the physical examination should be emphasized as much as carrying out the actual examination. However, even this was not satisfactorily done (Table 15).

The practice of the class-room teacher writing medical record should be eventually eradicated (92.1%), because school nurse is much better qualified to perform this task (Table 16).

The single most important cause for difficulties related with school health services is the gross lack of clinical equipment. In general, health clinic in schools were not provided the proper space for example 59.2% of the surveyed schools had an area of less than 35.5 square feet (Table 11). Fault was also found in the manner of usage of the health clinic as demonstrated by the fact that only 44.4% of schools had prepared clinics for exclusive use (Table 10).

It is recommended as a result of given studies (Kim, 1976; Hasumi, 1966) that the health clinics should have 888 square ft. minimum area for satisfactory conduction of health services in a school.

According to the results of the study on the school lunch program (Survey B), certain points such as attitude toward school lunch by school personnel, reasons to necessitate school lunch, coverage of school lunch program, distribution of lunch frequency, facilities for school lunch, menu provision, school lunch as an educational opportunity and pupils' opinions for school lunch are discussed.

More than the half of the principals expressed a negative attitude toward the school lunch program (Table 18). This unfavorable attitude seemed to be caused by the lack of interest and understanding or misunderstanding of the effectiveness of the school lunch program. However, teachers showed more positive attitude fortunately toward school lunch rather than

principals (Table 19). The reason why principals had a more negative attitude than teachers seemed that principals worried more seriously for side effects from the lunch program such as food poisoning than class-room teachers.

The negative attitude toward school lunch of the principals may be corrected and improved with improvement of school lunch program especially lunch menu because principals mostly explained that school lunch does not help the growth and development of children (71.0%).

Discussing on coverage of school lunch program, only half of the principals in the surveyed school though the school lunch program would provide for all of the pupils (Table 20). However, less teachers explained their opinion for the coverage (Table 21).

However, it is an ultimate and desirable goal that every pupils should be provided with a school lunch (Robin, 1968). For example, the school lunch are provided to 99% of elementary school pupils and 83% of middle school students in Japan (Ministry of Education, Japan, 1978).

The most desired frequency distribution of school lunch per week is five to six times (60.8%) compared with the current frequency (Five to six times in 41.9% and three to four times in 39.9%) (Table 22). Many countries such as Japan, England, France, U.S.A. and others are providing school lunch five times a week as being most effective (Paige, 1971; Egmond, 1974).

It is crucial in implementation of the school lunch program that sanitation and nutrition should be considered as the most important aspects during preservation, preparation and serving of food. However, only 42.7% of survey schools had kitchens and it further surprised us that only 6.3% of schools had dining rooms (Table 23) (Kim and Paik, 1976; Kim, 1976). Despite the fact that refrigerators have been

distributed to schools from the Ministry of Education (1979) for the purpose of a sanitary school lunch program.

Preparation of the menu of school lunch is another important matter. Therefore, the Ministry of Education handed down the guiding principles of the lunch menu. However, only a relatively few schools had nutritionists or dieticians. Even though menu preparation was still not satisfactory (Table 24).

The initial aim of the school lunch program implementation includes not only feeding but also educating the pupils. For this purpose teachers in the survey schools considered school lunch a positive education opportunity (Table 25) (Kim and Park, 1977; Kim and Tchaj, 1977).

The pupils commented that the advantages of the school lunch program such as the convenience, tastefulness and better nutrition outweighed the disadvantageous of less quality, poor taste, and less nutrition (Table 16, 27).

In observation for the relationship between growth and development of schoolchildren and implementation of the school lunch program, only relatively little differences were found out between at the school lunch demonstration school and at the ordinary non school feeding elementary school. Of course, it was not easy to find out any apparent and significant effect from school lunch program within a short period of time (2 years), however, it was suggested that the continuous implementation of the school lunch program will be desired for better growth and development of schoolchildren. Because height and weight increase of schoolchildren was higher at the demonstration school than at the control school and also serum protein level showed a little higher in the demonstration school rather than in the control school too (Kim, 1978).

## CONCLUSION

Aiming to understand the actual grass roots of school health activities in Korea, a fact-finding survey was carried out and the study results were summarized as follows:

- 1) As key personnel in the school health program, 76.4% of school nurses were less than 30 years old and 58.5% were single. 76.4% of nurses graduated from junior nursing colleges 74.5% and 64.8% were not well oriented in their new jobs.
- 2) Most schools established health clinics without any consideration of the size of the school population. Therefore 59.2% of surveyed schools had small size clinics (less than 355 square feet).
- 3) Physical examination as a part of health appraisal for pupils were carried out by general practitioners mostly (70.0%). However, the follow-up was done by nurses satisfactorily.
- 4) The fact that medical records including physical examination were written by classroom teachers mostly (92.1%) was observed.
- 5) Unsatisfactory health clinics at school (25.0%) and lack of understanding of school personnel for the school health program (15.9%) were pointed out as problems in the school health program implementation.
- 6) Supportive and positive attitudes toward school lunch were different between school principals (35.0%) and classroom teachers (84.5%) in the schools.
- 7) Principals criticized school lunch program as not helpful for the growth and development of school children (71.0%) and as a waste of budget (18.2%).
- 8) 52.4% of principals and 31.5% of teachers respectively explained that school lunch should be provided for all pupils on the one hand and on the other hand 28.7% of principals and 34.3% of teachers gave an other opinion which was provision only for those pupils wanting a lunch.
- 9) Between the actual and ideal frequency of school lunch provision a week, there is little difference. In both cases 5-6 times/week were desired at most.
- 10) Most schools were not equipped with sanitary kitchen (42.7%) or diningroom facilities (93.7%).
- 11) In the most cases the school lunch menus were provided by nutrition teachers(72.0%).
- 12) School lunch was considered as an opportunity for health education such as nutrition (30.8%), meal manner (13.2%) etc. by teachers.
- 13) Advantages of school lunch: convenient to eat (42.2%), tasteful food (29.6%) were pointed out and the disadvantages: food is of poor quality (40.3%), not tasteful (32.6%) were also pointed out.
- 14) In the comparative study between the school lunch demonstration school and the control school (non-school lunch), height and weight increase of school children and serum protein level were different: however, these facts were either not significant or of minimal significance.

In short, the path towards obtaining effective and desirable health services in Korea, of which the school lunch program is only part, is long and arduous and it will require patience and effort to realize this goal.

## REFERENCES

- Egmond DV: *School food service, Westport Connecticut, The AVI Publishing Company, Inc. 1974*
- Hasumi, A: *The New School Health Program, Daiichi Publish Co. Japan, 1966*
- Japanese Health and Welfare Statistical Association: *Indicators of health welfare, A status of national*

- health, 25(9), 1978
- Johns E: *Health for effective living, 5th ed.*, pp. 2-39, McGraw-Hill Book Company, 1970
- Kang HY, Byun JN: *School health activities, nurse-teacher of elementary schools in Chollanam-Province, Journal of the Korean Nurse, 7(6): 57-65, 1978*
- Kim MH: *Some consideration for improvement of school health programs, J. Korean Med Assoc, 1979*
- Kim MH: *School health and practice, 6th ed.*, Sumoon-sa, 1978
- Kim MH: *Health care for child in developing country, Korean Institute for Research in the Behavioral Science, pp. 217-219, 1976*
- Kim MH, Tchae BS: *Report of an evaluation of the programme of health and physical growth aspects of the school feeding and nutrition education pilot programme, Korea, the Ministry of Education, 1977*
- Kim SH, Park JK: *Report of an evaluation of the management aspects of the school feeding and nutrition education pilot programme, Korea, The Ministry of Education, 1977*
- Kim MH, Paik WK: *A study on improvement of school lunch program in a demonstration school (I), The Korean Journal of Medicine, 31(5): Nov. 1976*
- Kim MH : *A study on improvement of school lunch program in a demonstration school (II), The Korean Journal of Preventive Medicine, 9(1): Oct., 1976*
- Kim MH : *A study on a model of institutionalizing of school lunch program in Korea, The New Medical Journal, Vol. 21(3): Mar., 1978*
- Ministry of Education: *School health, Material series of physical education, 15, Publishing Department, Seoul Newspaper, 1973*
- Ministry of Education: *A yearbook of educational statistics, (Japan) 1978*
- Ministry of Education: *Guidance of school lunch programme in 1979 fiscal year, Bureau of Physical Education, 1979*
- Ministry of Education: *Statistical report of physical examination of students (1962-1977), Section of School Lunch, 1977*
- Paige DM: *School feeding program: Who should receive what? The Journal of School Health, 12(5): 1971*
- Robin F: *Their daily bread, Committee of School Lunch Participation, 1968*
-