FINAL REPORT

National Workshop on Health Manpower Planning in Korea

17-19 October 1985
at the Sorak Park Hotel, Kangwon Province

Korea Institute for Population and Health
Seoul, Korea
December 1985

PREFACE

This report contains the results of "the National Workshop on Health Manpower Planning in Korea", held at the Sorak Park Hotel from 17 to 19 October 1985.

The main objective of the workshop was to exchange and share views with government officials, representatives from professional associations, scholars and specialists on the long-term projection for health manpower: (physicians, nurses, and pharmacists) until the year 2004, as drafted by the KIPH. The ultimate goal was to assist in attracting more government attention to this issue and to suggest an appropriate policy direction such that long-term projections for health manpower would be adequate to meet the requirements of the Sixth Five-Year Economic and Social Development Plan.

The demand for health care services has risen sharply. This, in turn, resulted in an increased demand for health manpower. In particular, an expansionist policy on health manpower has been maintained since the latter half of the 1970 s to meet the ever increasing demand for medical care, caused mainly by population growth, rapid increase in the number of people covered by the medical security system, and higher medical service expectations. The effects of these policy measures will be cumulative, so it is necessary to have a comprehensive health manpower plan, which considers the past situation, evaluates the present position, and looks forward to meeting the expected trends, with regard to the demand for and supply of health manpower. It is desirable to supply adequate health manpower vis-a-vis expected demand, and to use and manage the existing pool of health personnel in as efficient a manner as possible.

The Korea Institute for Population and Health (KIPH) launched a project, entitled " A Study on Long-term Planning of Health Manpower" in 1984 at the request of the Ministry of Health and Social Affairs (MOHSA). The final report will be published by the end of this year. A strenuous effort was made to synthesize different views on health manpower

by professional associations, specialists and health administrators, since health personnel plays the most important role of all the health resources and the outcome of this study will be reflected in formulating health policy. Accordingly, the workshop was held to exchange and share opinions on health manpower so that the results of this research would be useful in policy making.

The workshop was successfully carried out, thanks to all participants' sincere and ardent involvement in discussions. A special acknowledgement must be given to every participant. Administrative assistance by officials of MOHSA and financial support by WHO are deeply appreciated. Without their help this workshop would not have been possible.

Major contributions to the workshop were made in the form of paper presentations, discussions and recommendations. These will be fully reflected in the final report, "A Study on Long-term Planning of the Demand for and Supply of Health Manpower". We would like to thank Dr. Kun-Yong Song, Director of Health Systems Research Divisions, KIPH and his associates, particularly not only for organizing, preparing, and implementing the workshop, but also for writing this report.

October 1985

Chan Moo Park, M.D., Ph. D.
President
Korea Institute for Population and Health

CONTENTS

I. SUMMARY

The general goal of the workshop was to suggest a plan for a reasonable long-term projection of the demand for and supply of health manpower which could be applied to the economic and social development plan in Korea. Related goals were to exchange and share views with representatives of professional associations, scholars, specialists and health administrators, on the long-term projection for the demand for and supply of health monpower: physicians, nurses, and pharmacists as prepared by the KIPH and to synthesize them for policy formulation. 30 representatives from professional associations, colleges and universities, government, and KIPH, and three specialists from WHO, and several observers from Kangwon Province participated in the workshop which was held at the Sorak Park Hotel for three days from 17 to 19 October 1985.

A list of papers presented follows:

1. Long-term projections of the demand for and supply of health manpower: physicians, nurses, and pharmacists (draft) by the KIPH (Korea Institute for Population and Health);
2. Demand for and supply of physicians projections by the Korean Medical Association
3. Demand for and supply of nurses
   projections by the Korean Nurses Association;
4. Demand for and supply of pharmacists
   projections by the Korean Pharmaceutical Association

The papers' attributes differed considerably. The KIPH paper gave results based upon available data and information, collected over a long period, along with systematic analyses for policy recommendations, but papers presented by the associations seemed to lack systematic explanations while too much emphasis was placed on the importance of its own manpower. The papers presented by the associations were,however, carefully considered so that the opinions would be fully reflected.

Throughout the workshop, emphasis was placed on having a consen-

sus on health manpower, centering around the KIPH plan in the course of paper presentations, plenary sessions and group discussions. A conclusion derived from the workshop was that the analysis of health manpower supply and a projection of health personnel were reasonably conducted, and thus were acceptable. There was, however, a diversity of opinion on estimated demand for health manpower in 2004, since there are many uncertainties involved. Especially, it was pointed out that there is the possibility of an overestimation of physicians in the KIPH plan. It was, therefore, suggested that the estimation criteria be reexamined and that alternative projections under different sets of assumption be provided. Similar problems come up concerning the estimated demand for nurses and pharmacists, but the degree of diversity was much smaller, in this case.

It was finally decided that the KIPH plan should be modified, considering comments from the participants, and the revised plan should be discussed with specialists, and representatives from professional associations, and then a final plan should be developed.

The workshop expressed significant implications on the subject matter, and hence was useful not only to KIPH, the organizer, but also to the other participants. All participated actively in discussions, and can take pride in the fact that they contributed to an improved plan.

There was no opportunity for the specialists from different areas of society to discuss the health manpower plan. So far, they have only expressed their own interest in particular types of health manpower. The workshop provided an excellent chance to review problems and solutions to health manpower planning in a limited area.

It would not have been possible to have so successful a workshop without financial assistance from WHO, administrative help from MOHSA (Ministry of Health and Social Affairs), and the important role played by Dr. Dong-Mo Rhie, WHO/HQ in organizing and implementing this workshop.

II. BACKGROUND

Korean expanded health care service expectations are rising. As the demand for medical care increases rapidly, the demand for health manpower, the providers of medical services, increases sharply accordingly.

Throughout the past two decades of implementing four Five-Year Economic Development Plans, the Korean economy showed remarkable progress. In accordance with overall economic advances, the health sector was expanded and recently a health development plan was incorporated into the economic development plan as one of the target sectors. In particular, the availability of and accessibility to health services were improved significantly during the period of the Fifth Five-Year Economic Development Plan. Many factors contributed to this health development, such as an increase number of people covered by health insurance, and strengthening of the health-related infra-structure, particularly primary health posts, health centers and health subcenters in rural areas, improved functioning both horizontally and vertically of the health care delivery system for the whole nation as well as the various regions and more equitable distribution of health resources.

The importance of the health manpower plan was stressed in view of the expected trend toward a more rapidly growing demand for health services, and justification that the ultimate goal of health policy lies in equitable access for everyone to health care services.

Since the second half of the 1970s, health policy makers have maintained an expansionist attitude as far as the supply of health manpower is concerned. They felt uneasy when they saw widening gaps between the ever-increasing demand for medical services, due to population growth, expansion of the medical insurance system, and higher medical service expectations, parallel with a modest increase in the supply of health manpower. The impact of such policy measures was vividly demonstrated in various aspects of the health sector and this is expected to increase. In this situation, it is important that we meet the future, say the year 2000,

by establishing a comprehensive health manpower plan based upon sound analyses of the past and the present trend of health manpower supply and demand. It is essential that we have sufficient health manpower to meet the expected demand level, and to use and manage the existing health personnel pool efficiently.

In this context, MOHSA requested that KIPH conduct the present study on planning the demand for and supply of health manpower. When the study is finalized by the end of 1985 after a two year gestation period, the results should be reflected in the formulating of the Sixth Five-Year Economic Development Plan (1987-1991).

The study deals with the analysis of health manpower supply until 1984 and an estimate of the demand for and supply of major health personnel such as physicians, nurses, and pharmacists for the next two decades, 1985-2004.

Objectives of this research can be summarized as follows:

(1) to analyze the supply side of health manpower for the period of 1945 to 1984,

(2) to examine the present situation considering losses, distribution and utilization of health manpower,

(3) to estimate number of active health personnel by age, region and institution as of the end of 1984, and analyze unemployed health manpower,

(4) to provide a baseline projection of the health manpower supply,

(5) to analyze the demand for health manpower,

(6) to estimate the health manpower demand under alternative plans,

(7) to provide possible strategies for narrowing the gap between supply and demand,

(8) to suggest measures for efficient utilization and management of health manpower.

An effort was made to collect as much data as possible and to perform objective analyses and estimates based on empirical data, but a health

manpower plan cannot be prepared only by researchers at a research institute. For a plan to be workable the opinions of professional groups, policy makers, and consumers should be reflected and synthesized in the plan. Organizing a workshop before the plan is finalized may serve this purpose best.

The workshop was planned in this context as a part of the research procedure, and was made possible by financial assistance from WHO with which MOHSA conferred. KIPH, at the request of MOHSA, was responsible for organizing and carrying out the workshop and writing the final report.

III. THE WORKSHOP

A. Organization

The program and objectives of the workshop were originally designed by KIPH, which then conferred with MOHSA, and the plans were finalized after being put before a preparatory committee. The committee members consisted of government officials, representatives from professional associations, scholars and KIPH fellows.

Such resolutions were adopted by committee members as decisions on writers of the papers to be presented, chairpersons for plenary sessions and panelists by topic for the workshop. In particular, a recommendation was made to prepare detailed guidelines to be forwarded to those writing papers from three professional associations: the Korean Medical Association, the Korean Nurses Association, and the Korean Pharmaceutical Association.

The following guidelines for writing the manuscripts and major contents of the papers were given:

1. prospective demand for and supply of relevant health personnel
   a) issues and problems
   b) prospects for supply
   c) prospects for demand
   d) alternative policy measures

2. Education and training
   a) new personnnel (years of education, educational institutions, qualifications, etc.)
   b) reeducation and continuing education

3. Utilization and management
   a) distribution
   b) enhancement of productivity
   c) enlargement of professional boundaries and functions
   d) reduction of losses

4. Relationship with other health personnel
   a) medical team
   b) health system

5. Others

Detailed guidelines were forwarded to the professional associations with the additional request that the papers reflect and represent the opinion and interests of the profession.

The committee discussed the number of participants and a final decision made (See Annex 1. List of Workshop Participants).

The second meeting of the preparatory committee was held at the KIPH on 16 October, one day prior to the opening day the workshop by the convening chairpersons of the plenary sessions, designated persons for paper presentation, panelists and Dr. Dong Mo Rhie, WHO/HQ.

The primary purpose of the meeting was to gain an understanding of the main contents of the papers to be presented, to exchange views on possible controversial parts of the manuscripts and to guarantee the smooth operation of the workshop. Printed workshop material was distributed, along with a brief presentation on each paper, and discussion followed. Dr. Dong Mo Rhie emphasized the aim of WHO support and the importance of the workshop and suggested organizing a steering committee. A steering committee was established and six members designated, one from each professional association, one from academia, one from KIPH, and Dr. Dong Mo Rhie.

B. Contents

The workshop was held at the Sorak Park Hotel for three days from 17 to 19 October 1985.

It consisted of four parts: 1) the opening ceremony, 2) a keynote speech, 3) the plenary sessions, and 4) group discussions (see workshop schedule below).

Program

National Workshop on Health Manpower Planning in Korea
October 17-19, 1985

17 October (Thursday)

08:00	Leave for Sorak Park Hotel	
14:00-14:30	Registration	
14:30-15:00	OPENING CEREMONY	
	Opening Address:	Dr. Chan Moo Park, President, KIPH
	Opening Speech:	Mr. Hai Won Rhee, Minister, MOHSA
	Congratulatory Address:	Mr. H.S. Dhillon Chief, Human Resource Development, WHO/WPRO
		Mr. Young Jin Kim, Governor, Kangwon Province
15:00-15:30	Break	

15:30-17:00 PLENARY SESSION

Chairman: Dr. chan Moo Park,
President, KIPH

Keynote Speech

I. "Health Policy, Health Services and Health Manpower in the Year of 2,000"
by Dr. Sung Woo Lee,
Director-General,
Bureau of Medical Affairs, MOHSA

II. "Some Suggestions on Formulation of Health Manpower Planning"
by Prof. Jong Huh,
Seoul National University

III. "World Trends in Health Manpower"
by Dr. A. Mejia,
Chief Medical Officer, WHO/HQ

17:00-18:30 PLEANARY SESSION

Chairman: Dr. Taek Il Kim,
Dean, College of Hallim

Paper Presentation (I)

"A Draft of Long-term Health Manpower Planning: physicians, nurses, and pharmacits"
by Dr. Kun Yong Song,
Director of Health Systems Research Division,
KIPH

Panelists: Dr. Suk Woo Yun,
Visiting Fellow, KIPH

Prof. Yeo Sin Hong,
Seoul National University

Dr. Suck Joon Cho,
President, Korea Pharmacist Manpower
Development Institute

18 October (Friday)

09:00-09:40 PLENARY SESSION

Chairman: Dr. Suk Woo Yun
Visiting Fellow, KIPH

Paper Presentation (II)

1. "KMA Plan for Production, Management, and Utilization of Physicians"
by Dr. Joo Hwan Kim, KMA

Panelists: Prof. Dal Sun Han,
College of Hallim
Prof. Jae Yong Park,
Kyung Buk University

09:40-10:20 2. "KNA Plan for Production, Management, and Utilization of Nurses"
by Dr. Mo Im Kim, KNA

Panelists : Mr. Nam Hee Kang, KMA
Prof. Soo Ji Kim, Ewha Women's University

10:20-10:50 Break

10:50-11:30 3. "KPA Plan for Production, Management, and Utilization of Pharmacists"
by Mr. Ki Sung Kim, KPA

Panelists: Prof. Jae Woong Hong,
Seoul National University
Mr. Su Chun Kim,
Senior Researcher, KIPH

11:30-12:00 Guidelines on Group Discussions
by Dr. Kun-Yong Song, KIPH

12:00-14:00 Lunch

14:00-18:00 GROUP DISCUSSION
Group I : Manpower Planning; Physicians
Group II : Manpower Planning; Nurses
Group III : Manpower Planning; Pharmacists

19 October (Saturday)

09:00-10:30 PLENARY SESSION
Chairman: Dr. Chan Moo Park
President, KIPH

Report of Group Discussion

10:30-10:50 Break

10:50-12:00 General Discussion and Recommendations

12:00 Closing

12:00 Lunch

14:00 Leave for Seoul

The group discussions were the single most important part of the workshop. They consisted of three groups: health manpower planning for physicians, for nurses and for pharmacists. Each participant took part in the appropriate discussion group according to his or her expertise.

Guidelines for the discussions were distributed prior to the group discusions to each participant.

Group Discussion Guidelines

1. Objective

   to synthesize the opinions revealed in the group discussions and to prepare a plan based on the papers presented by the KIPH, KMA, KNA and KPA.

2. Selection of chairperson

   one participant in each group will be elected chairperson.

3. Main contents of group discussions
   a. results of supply analyses (until 1984)
   b. supply projection (1985-2004)
   c. demand analysis (1984)
   d. demand projection (2004) ... criteria and results
   e. discrepancies between projected demand and supply, and policy measures to eliminate them.

4. Discussion

   Discussion will be based upon the summarized views of KIPH and professional associations.

5. Report of group discussions

   The chairperson of each group will make a report to the plenary session scheduled at 9:00, 19 October.

6. Others

   The results of the discussion of each group will be offered for floor discussion in the plenary session, to reconcile possible conflicts among different types of health personnel. including the issue of manpower-mix.

IV. PAPER PRESENTATIONS AND DISCUSSIONS

The papers presented covered four topics under long-term health manpower projection: physicians, nurses, and pharmacists (draft) by KIPH, and one each by three professional associations on the projections for the demand for and supply of relevant health personnel. After the papers are presented, these discussions and floor discussions will follow.

The main contents of the papers and the discussions were summarized as follows:

A. Long-term Projection of Health Manpower (Physicians, Nurses, and Pharmacists)

Presentation: Dr. Kun-Yong Song

Panelists : Dr. Suk Woo Yun,
Prof. Yeo Sin Hong, and
Dr. Suk Joon Cho

Main Contents of the Paper

a. Methodology

Contents	Sources of Data	Methodology
(1) Supply	Number of licenses registered and issued, data related to national medical examinations (NME), alumni directories, professional associations, health manpower census, Ministry of Education (MOE). number of students enrolled, and life tables	Cohort analysis

Contents	Sources of Data	Methodology
(2) Supply projection	MOE, number of applicants to MME and passing rates, life tables and number of health personnel employed	Cohort analysis and baseline projection
(3) Demand analysis	A study on reorganization of national health care delivery system for 1981 (utilization of medical services) survey of physician productivity, and medical insurance data.	Regression analysis
(4) Demand estimation	the same as above	Regression analysis and service target method

b. Major results

(1) Physicians

(a) Supply Analysis: As of the end of 1984, the cumulative number of licenses issued amounted to 31,432, while 3,009 physicians had died and 5,165 had emigrated. Consequently there were 23,258 physicians at the end of 1984 and of these 21,033 persons were practive . 90.3 percent of the total, with the remaining 2,225 inactive.

On analysis of physicians' employment status by age, institution, and region was made and data on their employment rates were supplied.

(b) Supply Estimate: Results of a baseline projection for the period of 1985 to 2004 were submitted. According to the projection, the number of physicians living in Korea and the number active were 68,200 and 63,000, respectively, in 2004.

(c) Demand Analysis: The number of physician visits and the length of stay in hospitals per insured person per annum in 1984 amounted to 9.4 visits and 0.599 of a day. Physician productivity is measured in terms of the numberof patients treated per physician per day. In hospitals the average physician saw 24.1 outpatients while those at clinics saw 32.1 on the average. A physician provided services to 6.354 in-patients per day.

(d) Demand Estimate: Demand for physician services for 2004 was estimated, assuming that all Korean people would be insured: medical services, non-medical services, and other services. Assumptions made for estimation were given as follows:

– Utilization

number of physician visits per person per annum = 10.0

length of hospital stay per person per annum = 0.821 day

– Physician productivity

number of outpatients treated per working day per physician = 40–50.

number of inpatients served per working day per physician = 6.354

– Non-medical services

It was assumed that 13 % of the total available physicians would be posted for these services.

– Other services

It was assumed that 10 percent of the total available physicians would be assigned to this category, considering the trend that the number of old physicians (65 or over) will increase, along with the increase in the number of old persons, and a small surplus of physician as a buffer is desirable.

Applying these assumptions, the demand for physician services for 2004 was tentatively estimated using estimated population statistics.

Service Category	Required Number of Physicians
Medical services	
Out-patient	38,500 - 48,100
In-patient	18,000
Non-medical services	8,700-10,200
Other services	6,500 - 7,600
Total	71,700 - 83,900

(e) Policy measures: Since it is expected that the number of new students enrolled at medical colleges will increase by 100-200 per annum from 1986 to 1998, there will be an approximate balance between supply and demand.

The following problems should, however,be considered together with policy measures.

- urban concentration of physicians
- medical services payment system
- strengthening of health services provided by public sector
- problems related to specialists
- changes in practice mode
- physicians holding two jobs
- physician qualifications
- delegation of physicians responsibilities
- inducement of those, who depend upon pharmacies or prescribe for themselves,to use physician services

(2) Nurses

(a) Supply Analysis: At the end of 1984, the cumulative number of licenses issued totalled 56,331, with 1,265 nurses dead and 9,895 working in other countries. According to our estimate, the

number of nurses living in the country was 45,171 while 20,547 nurses were either unemployed or inactive. Consequently, 24,624 nurses, 54.5 percent of nurses were employed in the field of health care services.

The employment status of nurses by age, institution, and region was provided along with employment rates by age.

(b) Supply Estimate: Results of baseline projection were provided for the period of 1985 to 2004. In preparing the estimate, the number of new licenses issued approximated the number of successful applicants in the national medical examination. The annual number of licenses issued was assumed to be fixed at 6,094 after 1990, so the number of nurses domestically available for 2004 was estimated at 160,000, of which employed nurses tolalled 91,000.

(c) Demand Analysis: Demand for nurses was divided into two parts: hospitals and clinics, and health institutions. The number of patients per nurse was calculated by classifying them as in-patients and out-patients in the case of hospitals and clinics. According to 1984 statistics, the number of patients per nurse amounted to 6.29, which exceeded by 3.8 persons the 2.5 patients per nurse prescribed in the Medical Law. Health institutions employed 30 percent of the total and it is assumed will maintain the same proportion in the future.

(d) Demand Analysis: Demand for nurses for 2004 was estimated by dividing it among hospitals and clinics, and health institutions. Estimates were made for alternative assumptions of the number of patients per nurse.

Assumption	Hospitals & Clinics	Health Institutions	Total
6.29 patients per nurse	43,700	20,000	63,700
4.0 patients per nurse	68,800	30,800	99,600
2.5 patients per nurse	110,000	49,200	159,200

(e) Policy Measures: Alternative strategies, either to increase the number of graduates or to utilize inactive license holders, could be suggested to reduce the gap between the supply of and demand for nurses. The size of supply shortage could be gradually lessened by increasing the annual enrollment by 85 for the period 1986 to 1990, thus producing 10,700 more nurses by the beginning of the next century, or measures could be devised to use the 11,300 unemployed nurses by lowering the unemployment rate from the present 45.5 percent to 35 percent. In addition, the following problems should also be considered when trying to choose an appropriate policy measure.

- lopsided distribution of nurses in favor of urban areas
- high unemployment rate
- skewed distribution toward hospitals of employed nurses
- underemployment at clinics
- two-tiered system for nurse education
- enlarged role of nurses

(3) Pharmacists

(a) Supply Analysis: As of the end of 1984, the total number of licensed pharmacists was 29,158, of which 13,657 were male and 15,501 female. Subtracting estimated deaths (2,303) and emigrants (1,652), 25,203 remain. The number of employed pharmacists totals 19,391, while 5,812 pharmacists, 20 percent of the total available pharmacists, are inactive. Analysis of dis-

tribution of employed pharmacists was done by age, employing institution, and region, along with employment and unemployment rates by age.

(b) Supply Estimate: A baseline projection was made for the period 1985 to 2004. The annual number of new licenses was approximated by an increment in the number of successful applicants to NME per annum and the estimate was 1,415 after 1986. Neglecting the number of pharmacists emigrating, the total available pharmacists in the country in 2004 was estimated at 44,119.

(c) Demand Analysis: The demand for pharmacists was determined on the basis of the number of prescriptions issued, pharmacists' productivity, and the importance of public institutions and the trade sector in a relative sense. Assuming that there would be a separation of the function of physicians and pharmacists, the demand for pharmacists was analyzed, based upon the ratio of prescription slips issued with respect to the number of patients (RPS) and productivity indicators. Demand for pharmacists in hospitals and at clinics was considered using the number of pharmacists per bed as an indicator. It was assumed that the demand for pharmaceutical services in other categories would increase by 50 percent, compared to the present.

(d) Demand estimate: Demand for pharmacists for 2004 was estimated using these indicators.

Alternative Assumptions	Pharmacies	Institution, Hospitals & Clinics	Others	Total
RPS = 37%	17,000	2,400	2,700	22,100
RPS = 60%	27,600	2,400	2,700	32,700
midpoint	22,300	2,400	2,700	27,400

(e) Policy Measures: At present there seems to be an over-supply of pharmacists and this trend will increase, so it is necessary that the number of pharmaceutical college graduates be limited to 1,220 students, which is the 1986 level. In addition to supply control, appropriate measures should be designed to use the existing pool of pharmacists more productively. The following problems should be given further consideration.

– over-supply of female pharmacists and under employment
– concentration of pharmacists in urban areas
– excess number of pharmacies in densely populated areas
– strengthening of pharmacists' role

Discussions of Papers

a. Supply of and Demand for Physcians

(1) It should be pointed out that there is a definite shortage of physicians, but it takes a long time to increase their number, so it is necessary to upgrade the supply to meet the rising demand, to extend the productivity of the average physician by providing better incentives to motivate quality improvement.

(2) It is recommended that a new body responsible for conducting research and coordination on health manpower planning on a continuing basis be established, since such planning must be constantly revised and improved. A tripartite participation will guarantee a proper functioning of the body by connecting institutions using manpower, institutions providing manpower, and related professional groups.

(3) It is desirable to check the ever-increasing demand for medical services at some specific level, since the 10 outpatient visits per person estimated for 2004 are too high to be financially viable, the optimum levlel of medical service utilization relative to supply should

be determined prior to estimating demand.

(4) Only two hypotheses were suggested, for the estimating which is not sufficient to guarantee an accurate projection, so it is necessary to provide more diversified hypotheses based upon different assumptions.

(5) It is noteworthy that it is estimated that population will increase by 1.2 times by 2004, while the demand for medical services is expected to triple in 2004 compared to the present, but utilization may not grow that fast.

(6) Physician demand is expected to stabilize. In view of the justification that health service should be directed toward "care" and away from "cure", it is desirable to increase nurses rather than physicians. Per capita cost of health services in Korea is approximately ¼ of that in Japan. The Korean people cannot afford to allow a rapid increase in medical demand, considering per capita income.

5. Supply of and Demand for Nurses

(1) As was mentioned in the paper presentation, it is necessary to estimate demand for nurses by taking into account changes in the direction of health services, health status and the needs of Korean people, and the population aging trend. In particular, such changes will have a significant impact on supply so that home-based care and its management, and rehabilitation will become important service categories.

(2) Considering the limitations of cure-oriented medical services at current medical facilities, it is necessary to train specialized nurse groups in preparation for the changing pattern of service toward community-oriented services, an expanded outreach system, technological progress in specific areas, and increased emphasis on mental health.

(3) It is recommended that the supply of and demand for nurses be approximiately balanced, considering the enhanced role and changing functions of nurses in meeting social needs.

(4) Appropriate measures to obtain the required number of nurses should be discussed, centering around specific areas where social needs are high and the expanded role of nurses can be most appropriate to meet demand.

c. Demand for and Supply of Pharmacists

(1) It is necessary to estimate demand by measuring effective demand, since the private sector plays the dominant role under the Korean laissez-faire system.

(2) The supply of an increased number of pharmacists should be discouraged.

(3) Females are the dominant manpower supply and in education this trend is accelerating, so it is mandatory that the number of female pharmacists be reduced by applying disincentives to female students, at the point of entering colleges or by establishing an explicit rule to maintain a predetermined male to female ratio at the colleges entrance stage.

(4) The unemployment rate for pharmacists is about 20 percent at present. Probably female pharmacists account for most of this although detailed information is not available. Should the tendency continue discrepancies between demand and supply would broaden.

(5) According to the present system, pharmacists can open pharmacies several years after obtaining their licenses. A required retraining program of a specified duration is necessary to improve the quality of pharmacist manpower.

B. Demand for and Supply of Physicians by the Korean Medical Assoication

Presentation: Dr. Joo Hwan Kim
Panelists : Prof. Dal Sun Han
Prof. Jae Yong Park

Main Contents of the Paper

a. Supply Analysis and Estimate

Avaliable data were used for the supply analysis. Two alternative assumptions were made for comparison purposes in estimating physician supply. One assumption was the fixing of the number of medical college graduates at the 1983 level and, the other was to raise annual number of graduates by 150 during the period 1984 to 1986.

b. Demand Estimate

Two different projections were provided under the following sets of assumptions.

Projection I	Projection II
1. Physician supply meets effective demand for physician services at present.	
2. All Korean people will be insured by 1990. Medical service utilization by the average Korean will reach the 1984 level of the insured under the Korean Medical Insurance Corporation in 1990, and will remain at that level during the projection period.	
3. Starting in 1991 demand for medical services by the average person will increase by 5% per annum.	

4.	The provider choice pattern will be the same as at present (80.1% of total outpatients will visit clinics).	Due to division of labor between hospitals and clinics, only outpatients are referred to clinics.

According to Projection I, the demand for physicians will be 33,368 in 1990, 44,732 in 1995, and 59,419 in 2000. It was estimated that 94.8 percent of physician demand would be for medical services in 1990.

Projection II provided different estimates for physicians : 30,640 in 1990, 40,655 in 1995, and 53,964 in 2000.

c. Comparison of Estimated Supply and Demand

It was estimated that supply would exceed demand by a range of 1,623 to 3,843 in 2000.

Policy variables were supposed to be considered in the demand estimates and the supply estimates in the effects of oversupply and such related issues as the relationship between herbalists and pharmacists, specialists, costs incurred in manpower training and the increased supply of medical services. It is, therefore, desirable to establish a body with the primary functions of making manpower projections and determination of the required enrollment at medical colleges.

Discussion on the Paper

a. Methodology for Demand Estimating

(1) Assumptions in preparing demand estimation

- Present number of physicians meets effective demand.
- Use of medical services will increase by 5 percent per annum starting in 1991.
- Present use pattern of insured persons will be maintained and will

ultimately apply to nation as a whole. It would however, be more persuasive to provide explanations based upon reliable data and rigorous research to justify these assumptions.

(2) It is not acceptable to assume that outpatient care will be completely removed from hospitals as in Projection II, since ambulatory care from hospitals is more economical from both the viewpoint of efficient use of resources and the patients themselves. On the countrary, out-patient care should be recommended if possible, rather than hospitalization, so it is not realistic to remove outpatient care from hospitals.

(3) It is necessary first to estimate need in making a projection for medical service demand.

(4) It is necessary to provide the supply estimate bv specialty.

(5) It is desirable to give due consideration to primary health care by others than physicians, such as herbalists, CHP, and pharmacists.

b. **Supply Estimating Problems**

(1) It was pointed out that a significant number of medical college students failed to move to their next academic year due to grade regulations, but this may not cause any significant problem considering the fact that 20 to 30 percent more students are allowed to enroll at medical schools at the entrance level due to the system of designating the number of graduates. Thus, concensus was reached on the basis of the fact that it is not necessary to consider the effect on the supply estimate of students failing to move up, since the buffer student group can fill the gap within 20 to 30 percent of incoming students.

(2) Since the number of physicians licensed does not equal the number of physicians reported, it was suggested that the estimate should

be based upon an accurate number of physicians after introducing a regular renewal system of licensing all physicians during a specified period.

C. Demand for and Supply of Nurses by Korean Nurses Association

Presentation: Dr. Mo Im Kim

Panelists: Mr. Nam Hee Kang

Prof. Soo Ji Kim

Main Contents of Paper Presentation

a. Supply Analysis

First losses from the manpower pool were estimated using the license registration data compiled by MOHSA. These losses included nurses employed abroad, those who emigrated, and those who nurses retired. The number of nurses domestically available was calculated by subtracting losses from the total of registered nurses. If the number of registered KNA members is assumed to be the number of employed nurses, the number of unemployed nurses could be estimated by subtracting the number of employed nurses from the number domestically available. The number of nurses licensed was thus estimated to be 46,651 in 1982, of which domestically employed nurses amounted to 19,280, the number who emigrated was 13,016, and the number who retired was 8,537, and the number unemployed was 5,818. In 1983, the numbr of domestically employed nurses totalled 23,997, which means the number of employed nurses accounted for 54 percent of the total number licensed.

b. Supply Estimation

Similarly, consideration was given to the number of nurses unemployed, dead, and retired in making the nurse supply projection. According to the projection, the number of new nurses per annum would amount to 6,110, the cumulative number of available nurses would reach 113,262. in 2000.

c. Demand Analysis and Estimate

Demand analysis was done by institution : hospitals, clinics and other health areas, along with a projection using patient classification methods and the manpower/population ratio.

(1) Criteria to Estimate Total Nurses Required in Hospitals and Projection

Nurses in hospitals can be placed in three classifications by type of work : nurses for inpatients, for outpatients, and those to cover other areas. The required number of nurses for inpatients was estimated to reach 9,672, using the 1985 level as the benchmark. In total, the number of nurses required was expected to reach 87,750 by 2000.

(2) Demand for Nurses at Clinics

At least one professional nurse is supposed to be at a clinic to provide treatment according to the physician's prescription, to provide health education for patients, and to educate and supervise aid nurses, and provide them with technical assistance. It was estimated that clinics would need 10,509 nurses by 2000.

(3) Demand for Nurses in Health Institutions

The number of nurses required by health institutions can be approached by institution, by function: public institutions, school health, industrial health, social welfare, nursing education, administration and research. As of 1984, 8,534 nurses were active, and it was estimated that 28,189 nurses would be required in this field by 2000.

d. Strategies to Enhance Nurse Productivity and Related Problems

(1) Strategies to Increase Nurse Productivity and Strengthen the Nurse Function

It is essential to use existing nurse manpower more efficiently to meet

the rising demand for medical services. Primarily, qualified nurses can play an important role as substitutes for physicians in one way and as members of the medical team in another way. Secondly, aid nurses, if appropriately educated and trained, can replace regular nurses in some medical service areas. The education system and objectives should be improved and be well-defined if they are to function properly. In the following areas, nurse functions are expected to be strengthened.

- primary health care programs for the poor in urban areas
- primary health care for industries and industrial health
- health maintenance programs for the elderly
- primary health care for school programs
- management of patients for ambulatory care
- broadened role of nurses in relation to medical insurance
- other social welfare areas

(2) Problems Related to Productivity Increase

(a) Improved educational system for nurses

- diversification in areas covered
- continuing education and training
- longer-term employment
- non-specialized areas

(b) Shortages of qualified professors and school administrators.

(c) Curriculum development for nursing education.

(d) Tradition and systems prejuditial to employment.

(3) Policy Measures

(a) Reorganization of education system for nursing

- unification of dual education system.
- improved faculty in both quantity and quality, and strengthened

facilities at nursing colleges. Sub-standard colleges in this category must be forced to improve

- establishment of a special fourth year program at colleges of nursing to provide graduates of junior colleges with one more year of education so that they can obtain a B.A.
- devising of policy measures to train professional nurses by area such as clinical nurses, nurse administrators, professors and researchers to organize and strengthen nurse manpower

(b) Improvement of nursing education curriculum.

(c) System improvement to increase employment rate and duration of employment.

Discussion on the Presented Paper

(1) The nurse manpower projection could be relevant if consumers' viewpoint were taken into consideration.

(2) The common KIPH and KNA theme was to use the existing pool of nurses rather than to increase it, so it is desirable to conduct research on the nurse's role in the fields of new born baby care, delivery room care, and rehabilitation. Also, delegation of some parts of outpatient care solely from physicians to nurses can be considered.

(3) If a separate or specialized role for nurse recognized, prices for nurse-oriented services could be suggested as separate service items.

(4) Not only the quantity but also the quality of nurses should be considered when making projections or the demand and supply of nurses with emphasis on the enhancement of ability and their qualifications. Since this issue is inevitably related to the nursing education system, improvement must follow.

(5) It is desirable to mke the best use of existing resources when the estimating procedure anticipates shortages, but careful examination

should be made of measures for employment inducement for those nurses who have not sought employment and those are over 55, and have been retired for some time.

D. Demand for and Supply of Pharmacists by the Korean Pharmaceutical Association

Presentation : Dr. Ki Sung Kim
Panelists : Prof. Jae Woong Hong
Mr. Su Chun Kim

Main Contents of Presented Paper

a. Supply Analysis

Using 1977 as the base year, the number of licensed and registered pharmacists amounted to 21,985, of which 204 pharmacists had died, 267 had not renewed their licenses, and 23 licenses had been canceled. Supposing that pharmacists over 61 had retired, and thus had been removed from the resource pool of active pharmacists, the effective number of pharmacists supply totalled 21,246 in 1977.

For the years following after 1977, 80 percent of the average death rate was applied to calculate the number of pharmacists who had died, but a fixed rate of five percent of the total was applied starting in 1983. As of 1984, the effective number of pharmacists amounts to 26,416 after consideration is given to retirement and emmigration.

b. Supply Projection

With a fixed death rate of five percent applied and with a 0.5 percent emmigration rate, number of domestically available pharmacists was estimated to be 33,395 in 2000 if it is assumed that number of additional license holders per annum will be maintained at the 1986 level of 1,220 pharmaceutical college graduates.

c. Demand Analysis

Demand for pharmacists can be classified into seven categories: pharmacies, pharmaceutical companies, medical institutions, wholesalers, educational institutions, health centers, and such other institutions as research, sanitation and administration. Criteria adopted for demand analysis in each category are: for pharmacies, the number of clients: for pharmaceutical companies and wholesalers, the rate of increase in pharmaceutical products; for medical institutions, the ratio of the number of pharmacists to physicians; for educational institutions and health centers, the number of designated pharmacists prescribed in the Law and for other areas, the economic growth rate.

d. Demand Projection

Projections were made using two different approaches: estimation by demand area (I) and estimation by demand for pharmacists in proportion to population size (II). The results are shown below.

Demand Estimation I

(1) Pharmacies

Provided that all Korean people are insured in the near future, the demand for pharmacists used by patients with minor symptoms would be 6,954 while that required to make up prescriptions would require 6,840, which would total 13,794 pharmacists in 2000.

(2) Pharmaceutical companies

Assuming that the number of pharmacists working for pharmaceutical companies would increase in proportion to the volume of pharmaceutical products, the required number of pharmacists is estimated at 11,186 in 2000.

(3) Medical institutions

Assuming that demand for pharmacists increases in proportion to the number of physicians employed in hospitals and clinics, 9,770 pharmacists would be needed in 2000.

(4) Educational institutions

Provided that the present designated number of graduates of pharmaceutical colleges is maintained, the required number of pharmacist graduates would be 193 in 2000.

(5) Health centers

Demand for pharmacist positions at health centers is estimated to be 374 in 2000, based upon the 1985 level.

f. Wholesalers

Assuming that the demand for pharmacists would increase in proportion to the volume of pharmaceutical products, 2,611 pharmacists would be required in 2000.

g. Other areas

Presumably one percent of pharmacists are engaged in other areas at present. If the demand for pharmacists in this area increases in accordance with economic growth, 828 pharmacists would be needed in 2000.

Demand Estimate II

In the "Prospects for Long-term Manpower Demand and Supply, and Strategies" prepared by the Ministry of Science and Technology for 1980, the demand for pharmacists was estimated to be 24,116.

d. Comparison of Estimated Demand and Supply

Supply will exceed demand according to estimation results. Provided that present supply capacity is maintained in the future, there will be an oversupply of more than 7,000 pharmacists in 1991. By that time, the number of pharmacists domestically available will reach 31,933 while the number of pharmacists required will be in the range of 20,000 - 25,000.

e. Strategies to Deal with Expected Oversupply

(1) To establish the long-term plan of demand for and supply of pharmacists, freeze the number of incoming pharmaceutical college students and devise appropiate supply control measures.

(2) To improve the education system for pharmacists: extend the duration of pharmaceutical college education, systematize the practical training program for a specified period after graduation.

(3) To use and manage the pharmacist pool efficiently: Discourage establishing new pharmaceutical colleges for women, improve working conditions for female pharmacists, permit pharmacy participation in medical insurance plan, establish more stringent conditions for opening pharmacies, encourage improved pharmacy management, increase pharmacist participation in the fields of health, and nutrition administration, and pharmacist administration.

Discussions on Paper

(1) So far pharmacists have played an important role in primary health

care. As the number of insured persons increased, the role by pharmacists shrank. So, it is necessary to conduct research on changes in the pharmacist's role and measures to deal with those changes.

(2) It is not sound to assume in the demand projection that demand for pharmacists will increase in accordance with increased production of pharmaceutical companies and increased volume of pharmaceutical trade.

(3) The estimate assumes procedure that demand for pharmacists in relation to the activities of pharmacies will increase as insurance expands, but on the contrary, the tendency would be reversed.

(4) It is expected that demand for pharmacy services will decrease as demand for pharmacists' services in hospital increases.

(5) In preparing the projection for the number of pharmacists required by hospitals it was assumed that the number would increase in proportion to the increase in the number of physicians. Since number of prescriptions issued is not proportional to the number of patients, there is the possibility of an overestimate of the number of pharmacists required.

(6) In terms of the ratio of pharmacists to the number of beds the estimated demand figure for pharmacists in hospitals is regarded as excessive, in comparison with Japan. The estimated ratio for 2000 is 10 times higher than that for Japan in 1982.

(7) It is necessary to consider the concentration of pharmacists in urban areas and to devise measures to check trend.

V. GROUP DISCUSSIONS

Participants took part in group discussions by topic based upon their special fields and interests. Discussions proceeded in accordance with guidelines distributed prior to the meeting. A group discussion summary follows:

A. Physician Demand and Supply

Chairman : Dal Sun Han
Participants: Chan Moo Park, Suk Woo Yun, Joo Hwan Kim, Dong Mo Rhie, Jung Joo Maeng, Nam Hee Kang, Chul Lee, Kun Yong Song and Kyung Sook Kim

a. Direction of Discussion

(1) Discussion proceeded according to main contents of the guidelines and every possible effort was made to arrive at a consensus.

(2) The discussion aimed at making possible the modification and improvement of the KIPH draft.

b. Results

(1) Supply Analysis

The supply analysis provided by the KIPH was, in general, appropriate. In particular, the age structure, number of students dropping out of college, the national medical examination the passing rate used for the projections were reasonable.

(2) Supply Estimate

It is expected that 60,460 physicians will be domestically available

in 2004, privided that the number of medical students for the projection period is maintained at the 1985 level. If the number of incoming students increases by 150 in 1986, there will be 7,000 more physicians available by 2004.

(3) Demand Analysis

(a) Criteria

1) The annual number of physician visits and the duration of the hospital stay for the period 1979 to 1984 compiled from insurance statistics and physician productivity measures were used as basic data.

2) The use of medical services can be summarized as reduced inpatient care and increased outpatient care. The trend toward increased use of outpatient care by insured persons is due mainly to the replacement of inpatient care by outpatient care, physician-induced demand, unlawful use of medical services, and how insurance prices.On the other hand, the reduced use of inpatient services can be attributed to the small proportion of the old in the population, a lack of ability to pay for inpatient care, and the low acceptability of need for hospitalization by Korean people in general.

(b) Results

1) The medical service use pattern has been considered an uncontrollable variable, but it is necessary to set up a "utilization" concept as a way of controlling it.

2) A major effort is required to analyze and identify the use pattern of insured persons.

(4) Estimate of Number of Physicians Required

(a) Criteria

Based on the assumption that all Koreans would be insured in 2004, the following criteria were used: annual number of phy-

sician visits per capita = 10; duration of hospital stay = 0.821 of a day (compared to 0.599 of a day for 1984); average number of outpatients treated by a physician = 40–50, and the average number of inpatients cared for by a physician = 6.354.

(b) Results

1) It was pointed out that the projection for physician demand for inpatient care was probably overestimated due to criterion errors.

2) It would be problematic to use a ratio of non-clinical physicians to clinical physicians (1984) in estimating the demand for physicians engaged in non-clinical areas, since it is not expected that non-clinical physicians will increase in proportion to clinical physicians.

3) According to the projection made by KIPH, there would be an increase of 6,500–7,000 physicians in other service areas, but it is not clear on what basis the estimate was made. Methodology should be given in more detail.

4) The estimate ranges should be more flexibly selected.

5) Consideration should be given to the following:
   - Since the reliability of basic data in relation to demand is doubtful, it is desirable to refer to specialists. Consensus should be reached on the assumptions.
   - Due consideration should be given to the main contents of the medical insurance system's future expansion.
   - Since accumulated research on medical demand and use is weak, an in-depth study of this area should be conducted.
   - All those on military duty (600 thousand), whom medical personnel serves, should be subtracted from the total population since medical personnel in military service was treated as part of the loss of available physicians.

– Impact on medical costs of changes in the number of physicians should also be analyzed.

(5) Supply and Demand Gaps, and Strategies to fill the Gaps

A major premise was that oversupply is not desirable. In this context the following points were considered.

1) Demand control

2) Delegation of some functions to other types of health personnel

3) Use of herbalists

4) Movement toward equal distribution of physicians by region

5) Reasonable composition of physicians by service category

6) Strengthened government effort to achieve equal distribution of medical care and to improve efficiency by assuming the responsibility for primary health care or basic services.

7) Support for innovation in medical technology

8) Impact on medical demand and supply of strengthened preventive medical services.

9) Appropriate distribution of physicians by medical institution

10) Study of feasibility testing of analysis results.

(c) Suggestions and Recommendations

(1) Consult with specialists in this area again after KIPH draft is modified

(2) Systematize the hearing process on physician supply and demand policy

(3) Support basic studies to increase feasibility of projection for physician demand and supply

B. Nurse Demand and Supply

Chairman: : Soo Ji Kim

Participants: Mo Im Kim, Yeo Sin Hong, Taek Il Kim, Dong Uck Park, In Ja Cho, Kyung Nam Lee, Hye Ryun Choi, Jung Ock Kim, Young Im Kim

a. Supply Analysis

(1) Criteria

Number of nurses domestically available and number of employed nurses were calculated based on the total number of licenses issued for the period since the establishment of the government to 1984, and due consideration was given to the loss of nurses due to death and emmigration.

(2) Results

(a) Participants agreed on research methodologies applied by KIPH and accepted them.

(b) Since the definition of the term "number of unemployed nurses" is not clear, it is necessary to define it clearly.

b. Supply Projection

(1) Criteria

Annual number of new nurses was regarded as equal to the number of successful national examination takers per annum. Number of successful applicants(S) was assumed to be fixed after 1990 and was calculated using the following fomula: $S_t = C_t \times (A_t \times B_t)$

where G_t = number of graduates in year t

A_t = ratio of number of applicants to number of graduates

B_t = examination passing rate

The employment rate in 1984 was used for the projection period.

(2) Results

(a) At present there are differences between the number of incoming students and number of graduates at nursing colleges. In the projection, however, it is assumed that the differences will disappear. Participants accepted the supply estimate.

(b) Participants agreed to the assumption that the present employment rate would be maintained for the baseline projection.

(c) It is desirable to break down the number of unemployed nurses by reason for unemployment such as horizontal transfers, voluntary leaving, non-voluntary leaving and giving up. This will be prospective research topic.

c. Demand Analysis and Projection

(1) Criteria

The required number of nurses was calculated based on the volume of medical service use including number of inpatients and outpatients in medical institutions. Demand for nurses in health institutions was derived from the number of nurses required for the institutions by using the present employment ratio between two fields, which is 7 to 3 in favor of medical institutions. The demand projection was reached by setting up three alternative assumptions on the number of patients per nurse – 6.29, 4.0 and 2.5.

(2) Results

(a) It is desirable to differentiate clinics from hospitals when conducting analyses of demand as well as preparing demand projections.

(b) Alternative methods for estimating the number of nurses

required in hospitals

- estimate according to number of patients per nurse based on present demand.
- estimate based on the criteria prescribed in the Medical Law.
- estimate using patient classification method

(c) Other health institutions

- the KNA plan, which used the Delphi method of estimating based upon the norm was accepted.
- estimate using present rate of employment by institution

d. Differences between Estimated Supply and Demand, and Strategies for Reconciliation

(a) Differences in Estimated Results between Supply and Demand

Supply analysis and supply projection by the KIPH were accepted, while demand analysis and demand projection should be modified to some extent, based upon the resolution as recommended in group discussions.

(b) Strategies for Reconciliation

(1) It is desirable to fill the gap between supply and demand by using unemployed nurses for productive purposes rather than increasing the number of graduates.

(2) It is recommended that the role of aid nurses be clearly defined in the realm of nurses' services thus making contributions to improving the health of the Korean people through quality care.

(3) The educational system for nurses should be reorganized to improve the quality of nursing services and increase nurse productivity. Existing nursing junior college should

be upgraded to regular colleges, where nurses will be educated as professional community health practitioners and midwives.

(4) It is desirable that the qualifications of aid nurses be raised: they should be high school graduates trained by responsible schools oriented toward nurse education.

(5) It will be necessary to give legal and institutional support to maximize use of unemployed nurses. In addition, detailed policy measures for improved morale and an improved role should be devised.

e. Recommendations

(1) It is necessary to set up a discussion session by inviting specialists to approve the revised version which evolved through the points raised in group discussions.

(2) Studies should be conducted on how to organize the nursing manpower pyramid including aid nurses in relation to building up an appropriate nurse manpower structure by service area.

(3) Due consideration should be given to relative ratios among physicians, nurses and aid nurses, which are 1 to 3 to 1 in that order at present.

(4) Nurse manpower consists of nurses and aid nurses. Due consideration should be given to an appropriate educational system to maximize the use of existing manpower.

C. Pharmacist Supply and Demand

Chairman : Suck Joon Cho
Participants: Jae Woong Hong, Jae Yong Park, Ki Sung Kim, Hun Jo Oh, Jae Yul Kim, Su Chun Kim

a. Supply Analysis

(1) Criteria

The total number of license earners (L) during the period from 1954 to 1984 was regarded as the number of licenses issued. Subtracting the number of pharmacists who had died and who had emigrated from L, the number of pharmacists domestically available was estimated, and then, the number of employed pharmacists excluding inactive pharmacists.

(2) Results

The participants agreed to accept of the results of supply analysis done by KIPH.

b. Supply Projection

(1) Criteria

The number of new pharmacists per year was regarded as the number of successful applicants for the national examination, and was assumed to be fixed after 1986. The employment rate among domestically available pharmacists was assumed to be at the 1984 level throughout the projection period.

(2) Results

(a) The point was raised that the retirement age of plarmacists should be considered, and the conclusion was that following the examples of developed countries, the retirement age should be 65.

(b) After subtracting the number of pharmacists who have retired,

the number of available pharmacists is estimated to be 41,274.

(c) The number of pharmacists who have emigrated, can be ignored, in light of the strict immigration policies in developed countries.

(d) It is necessary to divide successful applicants for the national examination into two groups to calculate the passing rate of new graduates and that of exgraduates. These two rates should be applied independently to supply a projection for each group.

c. Demand Analysis and Projection

(1) Criteria

The employment rate, among 25.203 available pharmacists, amounted to 80.1 percent in 1984. By institution, 81.7 percent were in pharmacies, while only 6.8 percent were engaged in medical institutions and 7.5 percent at pharmaceutical companies with the remaining 4 percent in other institutions. It is assumed that this employment status in 1984 simply reflected the user demand pattern.

(2) Results

(a) According to the KIPH projection, the demand for pharmacists is based on the demand for medical services, that is, the frequency of use and the rate of hospitalization. Since demand for medical services is accurately reflected in the demand estimate for physicians, the demand for pharmaceutical manpower had better be linked to demand for physicians rather than using the number of prescription slips issued.

(b) In developed countries where the division of labor between physicians and pharmacists is well institutionalized, the ratio of physicians to pharmacists is quite high in favor of the former, on the average 3 to 1.

(c) Based on the premise that the division of labor between medical manpower and pharmaceutical manpower and that medical insurance for the whole population will be realized, the conclusion was reached that a desirable ratio of physicians to pharmacists would be 2.5 to 1.

(d) According to the KIPH projections for physician demand, the number of physicians required amounts to 71,700 assumption 1 and 83,900 assumption 2 in 2004.

(e) Using the ratio of the number of physicians in the last year, the required or appropriate number of pharmacists would be around 28,680 (Assumption 1) to 33,560 (Assumption 2).

d. Differences between Estimated Supply and Demand, and Strategies for Balancing Them

(1) Differences between Estimated Supply and Demand

The main points raised in group discussions will be relected in the final report.

(2) Strategies for Reconciliation and Recommendations

(a) There were 5,812 unemployed pharmacists in 1984 because of the discrepancy between demand for and supply of pharmacists. The inactive group is expected to increase so measures should be devised put them to productive use.

(b) More than 80 percent of the employed pharmacists are concentrated in cities while the supply of pharmacists remains inadequatein rural areas, so consideration should be given to the appropriate distribution of pharmacists by region

(c) Since most pharmacist manpower prefers to open pharmacies, local pharmacies tend to be small and are likely to be shop-oriented. Appropriate measures should be devised to control the opening of new pharmacies under the medical insurance system.

(d) Recently, a large number of female pharmacists have been produced, but the majority of them remain unemployed indicating a waste of resources. It is necessary that the number of male and female pharmacists be balanced.

(e) Pharmacist education should be improved to enhance quality in response to socio-economic changes.

VI. PARTICIPANTS' IMPRESSIONS

Overall the participants recognized that the workshop had clearly defined objectives, but they felt that it was far too short and that more time should have been allocated.

The participants were of the opinion that the papers were seriously written. In particular, "Health Policy, Health Services and Health Manpower in 2000" by Dr. Sung Woo Lee, "Some Suggestions on Formulation of Health Manpower Planning" by Professor Jong Huh, and "World Trend in Health Manpower" by Dr. A. Mejia were by far the most valuable papers and were quoted frequently in the discussion sessions.

Since KIPH and each of the professional associations prepared its own draft and presentation on health manpower planning, which meant that there were two different institutions doing independent studies on the same health personnel, there was a good possibility that conflicts would occur due to gaps in interests and views. This assumption was realistic as was clearly demonstrated in the area of demand analysis and estimation.

It was, however, valuable because the gaps and conflicts centering around demand analysis and the projection were significantly reduced or almost eliminated only after reaching a consensus through group discussions and the plenary sessions.

Every participant took part in all parts of the workshop with sincerity and enthusiasm. The participants said that the workshop was productive and valuable enough for them to take pride in their participation.

Several problems, however, remained. Due to time limitations, it was only possible to deal with supply and demand, and related issues separately for each of three types of manpower: physicians, pharmacists, and nurses thus leaving the structural problem of health manpower such as the manpower-mix unresolved. It was also pointed out that the workshop was focused rather more on numbers and composition to make a demand for and supply of health manpower projection with only cursory

consideration of a projection for and management of health personnel. This does not necessarily mean that the latter issue is not as important as the former aspect of manpower planning.

Although existing data were limited in relation to demand and reliability might cause a serious problem, the participants felt that it might also be valuable to set up criteria for demand estimating based on the intuitive judgement of specialists since policy variables and technical innovation are difficult to quantity.

They expressed a unanimous opinion that the supply analysis and supply estimating done by KIPH was productive with effort devoted to it, and it could be used as a benchmark for future manpower planning studies.

The workshop was found particularly significant in that representatives of major components of health manpower including physicians, nurses, and pharmacists sat side by side to share views on manpower planning. Some of the participants from the professionl nurse group praised the workshop highly and mentioned that this opportunity was the only one in several decades. Participating pharmacists gave their opinions with honesty and enjoyed an excellent opportunity to hear from specialists in other areas of health manpower. They said also that they were satisfied with the new atmosphere that dealt with the manpower issue in a comprehensive manner by eliminating the old tradition that discussed the health manpower problem by centering it around physicians or placed emphasis value only on physician manpower.

In short, the workshop provided a valuable opportunity to discuss health manpower planning something which had never been done before.

VII. CONCLUSIONS AND RECOMMENDATIONS

(1) The objectives of the workshop were successfully achieved thanks to the excellent paper presentations, and the participants' active involvment in the discussions.

(2) The emphases and opinions provided by the workshop will be reflected in the final report, "A Study on a Long-term Plan for Demand for and Supply of Health Manpower" to be published by KIPH. The results of this study will be developed as a workable plan applicable to the Sixth Five-Year Economic Development Plan.

(3) The participants agree that the KIPH draft on supply analysis and the supply estimate for physicians, nurses, and pharmacists until 2004 was appropriately prepared.

(4) The KIPH drafts of demand analysis and demand projection, contain some parts which should be reexamined. Although the available data are quite limited, due consideration should be given to the direction of health policy, types of medical insurance, technological innovation, and various factors which affect demand for medical services, and estimating methods should be reexamined. Some of the participants suggested that it would be worthwhile to prepare demand estimates. based upon specialists' experience and judgement rather than on unreliable data.

(5) A majority of the participants felt strongly that a higher value should be given to efficient use of existing manpower rather than an increased supply in filling the gap between estimated demand and supply.

(6) Manpower utilization and management might then be considered important problems in manpower planning, but the workshop placed too much emphasis on the quantification aspects of manpower such as size, structure and distribution.

(7) Participants recognized the importance of health manpower planning in Korea's health system through the workshop and recommended the following

a. that KIPH take appropriate steps taking into account modifying and improving the KIPH draft based on the opinions and interests of various professional circles as revealed during the workshop, and that it should consult with specialists on the revised version prior to its publication.

b. to institutionalize the hearing process in order to exchange and share views on manpower supply and demand and to reflect it in policy formulation, in addition to the study titled "A Study on Health Manpower Planning".

c. to recommend further studies on basic research on a full scale to heighten feasibility of manpower planning in the future, and financial support by Korean government and foreign aid institutions.

d. to call for another workshop to study of utilization and management of health manpower and financial assistance by foreign aid institutions.

VIII. ACKNOWLEDGEMENT

The participants would like to express their appreciation for having been given the opportunity to take part in the workshop. They wish to express special thanks to Dr. Sung Woo Lee, Director-General of the Bureau of Medical Affairs of MOHSA for his administrative assistance and to the World Health Organization for financial support.

They also wish to thank Mr. H.S. Dhillon, Chief of the Human Resource Development of WPRO/WHO for coming from Manila to give the congratulatory address and Dr. A. Mejia, Chief, Medical Officer of WHO/HQ for his excellent presentation of the paper from Geneva. Finally, they deeply appreciate Dr. Dong Mo Rhie's (WHO/HQ) great contribution to making the workshop successful.

ANNEX 1.

List of Participants

Dr. C.M. Park	President, KIPH
Dr. S.W. Lee	Director-General, Bureau of Medical Affairs,MOHSA
Dr. J. Huh	Prof.,Seoul National University
Dr. T.I. Kim,	Dean, College of Hallim
Dr. K.Y. Song	Director of Health Systems Research Division, KIPH
Dr. S.W. Yoon	Visiting Fellow, KIPH
Dr. Y.S. Hong	Prof.,Seoul National University
Dr. S.J. Cho	President, Korea Pharmacist Manpower Development Institute
Dr. J.H. Kim	KMA
Dr. D.S. Han	Prof.,College of Hallim
Dr. J.Y. Park	Prof.,Kyung Buk University
Dr. M.I. Kim	Prof.,Yonsei University
Mr. N.H. Kang	KMA
Dr. S.J. Kim	Prof.,Ewha Women's University
Dr. K.S. Kim	KPA
Dr. J.W. Hong	Prof.,Seoul National University
Mr. S.C. Kim	Senior Researcher, KIPH
Mr. S.J. Choi	Director of Parmaceutical Administration Division, MOHSA
Mr. H.Y. Lee	Director of Community Health Division, MOHSA
Miss H.R. Choi	Medical Administration Division, MOHSA
Mr. I.C. Im	Planning & Budget Officer, MOHSA
Mr. D.W. Park	Section Chief of Medical Administration Division, MOHSA
Mr. B.S. Song	Director of College Administration Division, MOE
Mr. J.J. Mean	Director of Social Development Division, EPB
Mr. K.N. Lee	Section Chief of Industry Safety Division, MOL

Mr. H.Y. Oh	Chairman of Pharmaceutical Systems Committee, KPA
Miss. I.J. Cho	Secretary-General, KNA
Mr. C. Lee	Journalist, KMA
Mr. J.Y. Kim	Journalist, KPA
Miss. J.O. Kim	Journalist, KNA
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