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Measures for the Development of the Integrated Nursing and Care Service and the Improvement of the Compensation System

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【Publications】

The policy and strategy for the development of Future Health care plan, Korea institute for Health and Social Affairs (KIHASA), 2015(co-author)

Policy Consideration for the introduction of Value Based in Purchasing in South Korea, Korea institute for Health and Social Affairs (KIHASA), 2014(co-author)

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Research Background and Purpose

I Research Background and Purpose

1. Research Background and Necessity

□ Unlike other nations, South Korea **does not provide caregiving services for patients systematically**. As a result, the **traditional caregiving culture** in Korea involves the families of hospitalized patients or privately hired caregivers **living in the hospital room with the patients to provide care.**

○ **(Burden of care on patients and their families) Patients faced severe financial burden** due to caregiving costs. Aside from hospital admission costs, additional expenses incurred by the patients for **hiring caregivers** is estimated to be **KRW 2 trillion annually (as of 2012)**.

- When a family member is admitted to the hospital, **other family member(s) come to stay in the same hospital room** to care for the patient. Family caregiving began to increase physical, mental, social, and financial burden on the families of patients.

○ **(Quality of treatment and nursing)** This type of non-professional caregiving service provided by family members

and private caregivers **hinder the professionalism and consistency in nursing and treating patients,** resulting in the **decreased quality of nursing care for patients.**

- Hospitals have been unable to **systematically manage sanitary environment in hospital rooms** due to the presence of **caregivers and family members, having their meals and living in hospital rooms**. This has exposed **patients and caregivers to inter-infection and safety risks**, raising issues of nosocomial infection.

□ As a result, the Integrated Nursing and Care Service (formerly Comprehensive Nursing Care Service) was introduced in July 2013 in order to reduce the burden of care for patients and "improve the quality of nursing care."

○ The Integrated Nursing and Care Service were intended to ease the **burden of care on patients and families, increase the satisfaction of patients** by **building a professional nursing care service system, and improve the quality of medical service. A roadmap for the successful expansion of the services was established** in 2014.

□ However, since the roadmap for the expansion of the Integrated Nursing and Care Service was established in 2014, many changes have occurred in policy and environmental

conditions surrounding the Integrated Nursing and Care Service system until 2016.

○ Therefore **the roadmap for expansion**, which was established at the time the service was introduced in 2014, **should be reviewed and revised,** reflecting the changes in the systematic conditions of the Integrated Nursing and Care Service. In addition, it is necessary to **review the establishment of a new roadmap for expansion** to be instituted.

2. Research Purpose

□ The roadmap for expansion established in 2014 was based on the **"demand for Integrated Nursing and Care Service"** with a **focus on achieving the policy goal (policy effectiveness) of expanding the Integrated Nursing and Care Service system.**

○ Due to a **sharp increase in the level of compensation for Integrated Nursing and Care Service** compared to when it was first introduced, more hospitals wish to adopt the system. However, the **number of acquired nursing personnel continues to be lower** than the demand.

○ In other words, there is an **increasing demand for hospitals** to adopt the Integrated Nursing and Care Service but **not enough nursing personnel have been acquired** to meet

the demand, resulting in **excess demand for the service and shortage of nursing staff.**

○ Therefore, it is necessary to **establish a roadmap for expansion with a focus on the "provision of service"** instead of the demand for service.

□ The expansion of the Integrated Nursing and Care Service needs to be preceded by securing enough nursing personnel. This study will propose a roadmap for expansion based on the **"supply of nursing personnel" with a focus on the practical possibility of expanding the Integrated Nursing and Care Service (feasibility).**

II

Estimated Supply and Demand of Nursing Personnel

1. Estimated Supply of Nursing Personnel
2. Estimated Demand for Nursing Personnel

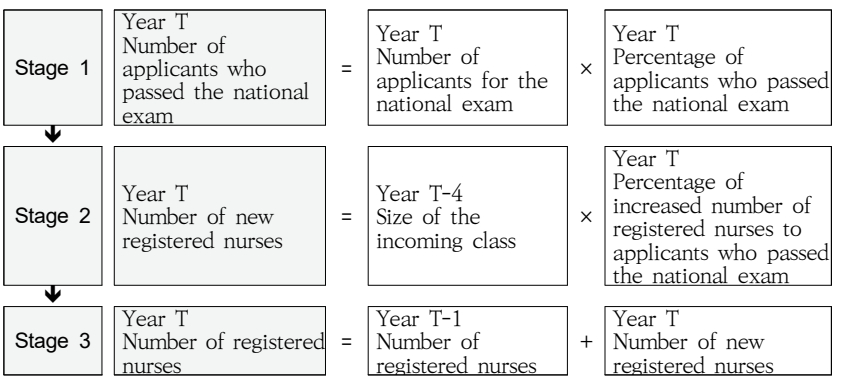
Ⅱ Estimated Supply and Demand of Nursing Personnel

1. Estimated Supply of Nursing Personnel[1)]

□ In order to estimate the supply of nursing personnel, this study will first estimate the number of registered nurses, clinical nurses, hospital nurses, and ward nurses to calculate the total estimate of additional nurses for integrated inpatient nursing care.

1) Estimated Number of Registered Nurses

[Figure 1] The Process of Estimating the Number of Registered Nurses



1) In all processes of estimation, the estimated value has been determined by using three alternatives: the rate of increase in the last three years; the rate of increase in the last five years; and the annual average rate of increase in the last five years. However, in this study, for the sake of consistency in estimation, the average value in the last three years has been used as the default value.

(1) Stage 1: Number of applicants who passed the National Nursing Licensure Examination

Stage 1	Number of applicants who passed the national exam	=	Number of applicants for the national exam	×	Percentage of applicants who passed the national exam

□ **The number of applicants who passed the national exam** is estimated by **multiplying the number of applicants for the exam** by **the percentage of applicants who passed the national exam.**

□ In order to estimate the **number of applicants for the national exam**, it is important to examine the **size of incoming classes at nursing schools** for the past 10 years.

〈Table 1〉 The Sizes of Incoming Classes at Nursing Schools in the Past 10 Years (2008-2018)

Year	Total number of incoming students at nursing schools		Within the number of incoming students at nursing schools		Outside the number of incoming students at nursing schools	
	Number of incoming students	Increase	N	Increase	N	Increase
2008	13,640	n.a.	11,645	n.a.	1,995	n.a.
2009	15,507	1,867	12,663	1,018	2,844	849
2010	17,692	2,185	14,154	1,491	3,538	694
2011	19,263	1,571	15,396	1,242	3,867	329
2012	21,093	1,830	16,869	1,473	4,224	357
2013	21,715	622	17,538	669	4,177	-47
2014	22,372p)	657	18,283	745	4,089a)	-88
2015	23,272p)	900	19,183	900	4,089a)	0
2016	23,272p)	0	19,183	0	4,089a)	0
2017	23,272p)	0	19,183	0	4,089a)	0
2018	23,772p)	500	19,683	500	4,089a)	0

Note: a) Average value for three years, from 2011 to 2013, p) estimated value
Source: Ministry of Health and Welfare, December 2016.

□ **(Number of applicants to the National Nursing Licensure Examination)** The number of applicants to the National Nursing Licensure Examination can be **deduced based on the number of incoming nursing students.**

○ **The number of applicants for the national exam is not exactly the same as the number of incoming nursing students**, considering the length of different programs (three or four years), as well as leave of absence, dismissal, and other reasons. However, since **most nursing programs have been changed to four-year programs**, this study deduced the number of applicants for the national exam by assuming that the incoming students took the national exam after four years.

〈Table 2〉 Percentage of Incoming Nursing Students Who Applied to Take the National Exam

Number of incoming students		National exam applicants		Percentage of incoming students who applied for the national exam
Year	Incoming students	Year	National exam applicants	
2008	13,640	2012	13,536	99.2%
2009	15,507	2013	13,799	89.0%
2010	17,692	2014	16,079	90.9%
2011	19,263	2015	16,285	84.5%
2012	21,093	2016	18,655	88.4%
Alternative 1: Average of the last 3 years				**88.0%**
Alternative 2: Average of the last 5 years				90.4%
Alternative 3: Increases and decreases in the last 5 years				-5.6%

Source: Ministry of Health and Welfare, December 2016.

□ **(Incoming Nursing Students Who Applied to Take the National Exam)** Assuming that the **incoming nursing students took the national exam four years** after their enrollment in school, this study used the **percentage of incoming nursing students who applied to take the national exam** in the last three years to **estimate the number of future applicants for the national exam** from 2017 to 2022.

〈Table 3〉 Estimated Number of Applicants for the National Exam (2017-2022)

Number of incoming nursing students		Percentage of incoming students who applied for the national exam B	Estimated number of applicants for the national exam	
Year	Incoming students A		Year	Applicants C=A*B
2013	21,715	88.0%	2017	19,099
2014	22,372		2018	19,677
2015	23,272		2019	20,469
2016	23,272		2020	20,469
2017	23,272		2021	20,469
2018	23,772		2022	20,909

□ The number of applicants who will pass the national exam from 2017 to 2022 was estimated by multiplying the number of applicants for the national exam by 95.5 percent, the percentage of applicants who passed the national exam in the past three years.

〈Table 4〉 Estimated Number of Applicants Who Passed the National Nurse Licensure Examination (2017-2022)

Estimated number of applicants for the national exam		Percentage of applicants who passed the national exam D	Estimated num ㄴber of applicants who passed the national exam E=C*D
Year	Number of applicants C=A*B		
2017	19,099	95.5%	18,249
2018	19,677		18,801
2019	20,469		19,558
2020	20,469		19,558
2021	20,469		19,558
2022	20,909		19,978
Cumulative (2017-2022)			115,702명

(2) Stage 2: Increased Number of Registered Nurses

Stage 2	Number of new registered nurses	=	Number of applicants who passed the national exam	×	Ratio of applicants who passed the national exam to the increase in the number of registered nurses

□ The increased number of registered nurses was estimated by multiplying the number of applicants who passed the national exam by the percentage of increase in the number of registered nurses to applicants who passed the national exam.

〈Table 5〉 The Trend of the Ratio of applicants who passed the national exam to the increase in the number of registered nurses

Year	Number of applicants who passed the national exam A	Number of registered nurses B	Number of new registered nurses C=Bt-1-B	Number of loss of registered nurses D=A-C	Ratio of applicants who passed the national exam to the increase in the number of registered nurses E=A/C
2010	11,857	270,274	11,706	151	98.7%
2011	12,519	282,656	12,382	137	98.9%
2012	12,840	295,254	12,598	242	98.1%
2013	13,065	307,797	12,543	522	96.0%
2014	15,458	323,041	15,244	214	98.6%
2015	15,743	338,629	15,588	155	99.0%
Alternative 1: Average of the last 3 years					**97.9%**
Alternative 2: Average of the last 5 years					98.1%
Alternative 3: Increases and decreases in the last 5 years					0.03%

Source: Korea Health Personnel Licensing Examination Institute, December 2016.

(3) Stage 3: Number of Registered Nurses

Stage 3	Year T Number of registered nurses	=	Year T-1 Number of registered nurses	+	Year T Number of new registered nurses

□ The number of registered nurses for a specific year was calculated by **adding the number of new registered nurses from that year and the number of registered nurses from the previous year.**

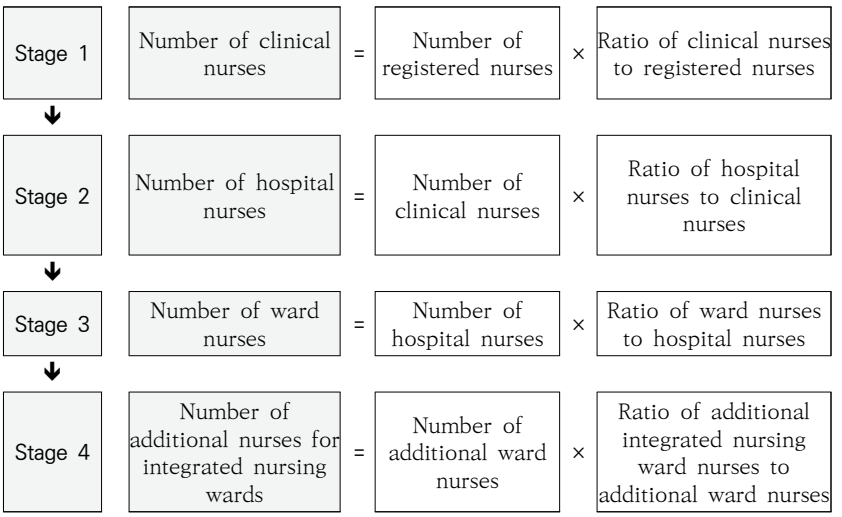
〈Table 6〉 Estimated Number of Registered Nurses (2017-2022)

Year	Estimated number of applicants who passed the national exam A	Ratio of applicants who passed the national exam to the increase in the number of registered nurses B	Estimated number of new registered nurses C=A*B	Estimated total number of registered nurses D=Dt-1+C
2016	-		-	356,134
2017	18,249		17,862	373,996
2018	18,801		18,402	392,398
2019	19,558	97.9%	19,143	411,541
2020	19,558		19,143	430,684
2021	19,558		19,143	449,827
2022	19,978		19,554	469,381
Cumulative (2017-2022)			113,247명	-

Note: In all processes of estimation, the estimated value has been determined by using three alternatives: the rate of increase in the last three years; the rate of increase in the last five years; and the annual average rate of increase in the last five years. However, in this study, for the sake of consistency in estimation, the average value in the last three years has been used as the reference value.

2) Estimation of the Number of Additional Nurses for Integrated Nursing Wards[2)]

[Figure 2] Process of Estimating the Number of Additional Nurses for Integrated Nursing Wards



(1) Stage 1: Number of ward nurses

□ In order to estimate the number of ward nurses, it is necessary to calculate the **number of clinical nurses, hospital nurses,** and ward nurses respectively **based on the estimated number of registered nurses calculated above.**

2) ① Active nurses = non-clinical nurses + clinical nurses, ② Clinical nurses = Hospital nurses + nurses in medical organizations other than hospitals, ③ Hospital nurses= Ward nurses + nurses who work outside of the wards, ④ Ward nurses = general wards + special wards + integrated nursing wards

〈Table 7〉 Number and Percentage of Nurses by Category

Year	Registered nurses A	Clinical nurses B	Hospital nurses C	Ward nurses			A/B	C/B	D/C
				Total D	General wards	Integrated nursing wards			
2011	282,656	137,958	105,264	54,920	54,920	-	49%	76%	52%
2012	295,254	144,877	109,968	55,664	55,664	-	49%	76%	51%
2013	307,797	151,374	114,638	57,034	56,387	647	49%	76%	50%
2014	323,041	160,223	121,057	59,718	58,616	1,102	50%	76%	49%
2015	338,629	167,647	126,464	61,463	58,228	3,235	50%	75%	49%
2016	356,134[P)]	177,966	134,480	66,502	58,889	7,613	50%	76%	49%
Alternative 1: Average for the last 3 years							**50%**	**76%**	**49%**
Alternative 2: Average for the last 5 years							49%	76%	50%
Alternative 3: Increases and decreases in the last 5 years							0.5%	-0.1%	-0.6%

Note: The numbers of nurses are figures compiled as of the end of the year. P denotes an estimated figure.

Source: Internal documents, National Health Insurance Service, December 2016.

□ The following is the result of the **estimation of the number of nurses for each category** using the above estimation method.

〈Table 8〉 Estimated Results of the Number of Nurses by Category (2017-2022)

Year	Registered nurses	Clinical nurses	Hospital nurses	Ward nurses
2017	373,996	186,892	141,225	69,837
2018	392,398	196,088	148,174	73,274
2019	411,541	205,654	155,402	76,848
2020	430,684	215,220	162,631	80,423
2021	449,827	224,786	169,859	83,998
2022	469,381	234,557	177,243	87,649

Note: In all processes of estimation, the estimated value has been determined by using three alternatives: the rate of increase in the last three years; the rate of increase in the last five years; and the annual average rate of increase in the last five years. However, in this study, for the sake of consistency in estimation, the average value in the last three years has been used as the reference value.

□ Based on the estimated number of nurses by category, the estimated number of additional nurses by category can be calculated as follows:

○ The number of ward nurses was expected to increase by 2,448 in 2017 and by 3,605 in 2022.

〈Table 9〉 Estimated Number of Additional Nurses by Category (2017-2022)

Category	Additional Registered Nurses	Additional Clinical Nurses	Additional Hospital Nurses	Additional Ward Nurses
2017	17,862	8,926	6,745	3,335
2018	18,402	9,196	6,949	3,436
2019	19,143	9,566	7,229	3,575
2020	19,143	9,566	7,229	3,575
2021	19,143	9,566	7,229	3,575
2022	19,554	9,771	7,384	3,651
Cumulative (2017-2022)	113,247	56,591	42,765	21,147

(2) Stage 2: Number of Additional Nurses in Integrated Nursing Wards

□ The number of additional nurses in integrated nursing wards was calculated by **multiplying the number of additional general ward nurses by the ratio of additional nurses in integrated nursing wards to additional general ward nurses.**

○ First, the **number of additional nurses in general wards** was calculated, and then the **percentage of the number**

of general ward nurses to the number of integrated nursing ward nurses was calculated.

〈Table 10〉 The Number of Additional Nurses for Integrated Nursing Wards Compared to the Number of Additional Ward Nurses

Category	Additional ward nurses	Additional integrated nursing ward nurses	Additional integrated nursing ward nurses compared to additional ward nurses
2013	1,370	237	17.3%
2014	2,684	443	16.5%
2015	1,745	1,164	66.7%
2016	5,039	2,720	54.0%
Alternative 1: overall average (2013-2016)	10,838	4,564	42.1%
Alternative 2: average in recent years (2015-2016)	6,784	3,884	57.3%
Alternative 3: recent value (2016)	5,039	2,720	54.0%

□ The number of additional nurses for integrated nursing wards was calculated by multiplying the number of additional ward nurses by the ratio of integrated nursing ward nurses to general ward nurses.

○ In the last two years, 2015 to 2016, the Integrated Nursing and Care Service began to be expanded, and **57.3 percent of additional ward nurses were assigned to integrated nursing wards.**

○ Considering the increase or the decrease in the number of nurses in the future, this study assumed four scenarios in which the ratios of integrated nursing ward nurses to

general ward nurses were **50 percent, 60 percent, 75 percent, and 100 percent.** The number of additional nurses assigned to integrated nursing wards were **calculated according to each scenario.**

- If only **50 percent of additional ward nurses are assigned to integrated nursing wards, approximately 10,000 additional** nurses are expected to be assigned to integrated nursing wards **between 2017 and 2022.**
- If **all of the additional ward nurses are assigned to integrated nursing wards, approximately 20,000 additional nurses** are expected to be assigned to integrated nursing wards **between 2017 and 2022.**

〈Table 11〉 Estimated Number of Nurses for Integrated Nursing Wards by Scenario

Category	Number of additional nurses for integrated nursing wards by scenario: Ratio of additional integrated nursing ward nurses compared to additional ward nurses			
	50%	60%	75%	100%
2017	1,668	2,001	2,502	3,335
2018	1,718	2,062	2,577	3,436
2019	1,787	2,145	2,681	3,575
2020	1,787	2,145	2,681	3,575
2021	1,787	2,145	2,681	3,575
2022	1,826	2,191	2,739	3,651
2017-2022	10,573	12,688	15,860	21,147

2. Estimated Demand for Nursing Personnel

(Integrated nursing wards) Necessary number of additional nurses	=	(Integrated nursing wards) Necessary number of nurses	–	(General wards) Number of existing nurses

□ Estimated demand for nursing personnel is estimated by: **1) calculating the necessary number of nurses** per bed in integrated nursing wards by the type of medical institution, **2) the number of existing nurses** per bed, and finally **3) the necessary number of additional nurses** per bed.

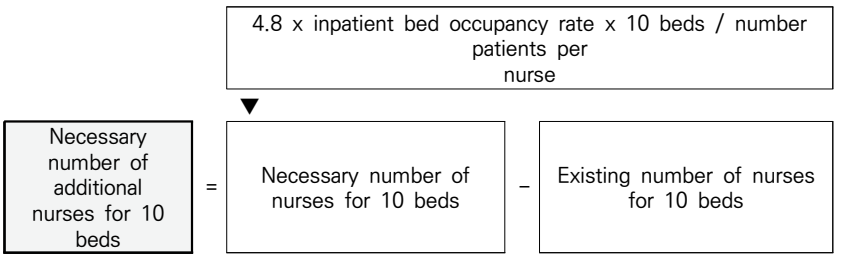
□ This study calculated the necessary number of nurses **using the standard personnel allocation** by the type of medical institution; and the number of additional nurses by the type of medical institution were calculated **using the average nurse staffing level** by the type of medical institution

〈Table 12〉 An Alternative Means to Calculate the Necessary Number of Additional Nurses

Category	Necessary number of nurses		Number of existing nurses		Pros
Alternative 1	Standard personnel allocation by the type of medical institution	+	Average nurse staffing level by the type of medical institution	⇐	Ease of calculation

1) Necessary Number of Nurses for Integrated Nursing Wards

[Figure 3] Process of Estimating Necessary Number of Nurses



□ The necessary number of additional nurses for integrated nursing wards is calculated by **subtracting the number of existing nurses sin general wards** from the **necessary number of nurses according to the standards of nursing personnel allocation.**

□ **(Necessary number of nurses)** The necessary number of nurses can be calculated by dividing 4.8 (people) by the number of patients per nurse.

□ In this calculation, 4.8 people reflects the fact that the manpower of 4.8 people is needed to care for patients around the clock, when considering the fact that the manpower of three people is needed in three shifts and more is necessary when factoring in weekends and vacations.

□ (Percentage of inpatient bed occupancy) For the percentage of inpatient bed occupancy by the type of medical institution, this study used the average value from the last three years (2013-2015), based on the medical management analysis data.

○ An examination of the average percentage of inpatient bed occupancy by the type of medical institution reveals that the average percentage was **85.9 for tertiary hospitals, 85.1 for general hospitals,** and 79.5 for clinics.

〈Table 13〉 Percentage of Inpatient Bed Occupancy by the Type of Medical Institution

Category	Tertiary hospitals	General hospitals			Clinics
		300 or more	160-299	Less than 160	
Recent 3 years	**85.9**	87.0	86.9	81.4	**79.5**
		85.1			
Recent 5 years	87.2	86.8	89.1	81.1	78.3
		85.6			

Source: Hospital Management Analysis, Korea Health Industry Development Institute.

2) Number of Existing Ward Nurses

□ (Number of existing nurses) The number of existing nurses is calculated using the nurse staffing level distribution by the type of medical institution.

〈Table 14〉 Number of Nurses for 10 Beds by Nurse Staffing Level

Level	Tertiary hospitals			General hospitals and clinics		
	Number of beds per nurse	Reference value A	Number of nurses for 10 beds B=10/A	Number of beds per nurse	Reference value A	Number of nurses for 10 beds B=10/A
1	Less than 2.0	2.00	5.00	Less than 2.5	2.50	4.00
2	2.0~2.5	2.25	4.44	2.5~3.0	2.75	3.64
3	2.5~3.0	2.75	3.64	3.0~3.5	3.25	3.08
4	3.0~3.5	3.25	3.08	3.5~4.0	3.75	2.67
5	3.5~4.0	3.75	2.67	4.0~4.5	4.25	2.35
6	4.0 or more	4.50	2.22	4.5~6.0	5.25	1.90
7	-	-	-	6.0 or more	6.50	1.54
No level	-	-	-	-	7.50	1.33

3) Necessary Number of Additional Nurses for Integrated Nursing Wards

□ In this study, the **necessary number of additional nurses** was **calculated using the standard distribution of nurses by the type of medical institution.**

○ **(Necessary number of nurses)** The necessary number of nurses **for 10 beds** was calculated using the **standard personnel distribution** by the type of medical institution.

〈Table 15〉 Estimated Number of Necessary Nurses: Alternative 1

Category	Ratio of nurses to patients (Standard personnel distribution)	Necessary number of nurses per patient A	Percentage of inpatient bed occupancy by the type of medical institution B	Necessary number of nurses for 10 beds C=A*B
Tertiary hospitals	1:6	8.00	85.9	6.87
General hospitals	1:10	4.80	85.1	4.08
Clinics	1:12	4.00	79.5	3.18

○ (Number of existing nurses) The average nurse staffing levels were calculated for the different types of medical institutions. The results were: level 2.0 for tertiary hospitals, level 4.3 for general hospitals, and level 6.9 for clinics. Therefore, for every 10 beds, the number of nurses in levels 2, 4, and 7 were used for tertiary hospitals, general hospitals, and clinics respectively.

〈Table 16〉 Estimated Number of Existing Nurses: Alternative 1

Levels	Tertiary hospitals		General hospitals		Clinics	
	Number of institutions	Percentage	Number of institutions	Percentage	Number of institutions	Percentage
1	6	14.0%	18	6.1%	13	1.1%
2	**30**	**69.8%**	55	18.6%	33	2.7%
3	7	16.3%	71	24.1%	68	5.6%
4	-	-	**29**	**9.8%**	53	4.4%
5	-	-	23	7.8%	62	5.1%
6	-	-	35	11.9%	107	8.8%
7	-	-	34	11.5%	**112**	**9.2%**
No level	-	-	30	10.2%	770	63.2%
Total	43	100.0%	295	100.0%	1,218	100.0%
Average level	2.2 ⇒ Level 2		4.3 ⇒ Level 4		6.9 ⇒ Level 7	
Number of existing nurses for 10 beds	4.44		2.67		1.54	

Source: Internal Documents, National Health Insurance Service (Average nurse staffing level by the type of medical institution, as of August 2016).

○ (Necessary number of additional nurses) The average nurse staffing levels were calculated for the different types of medical institutions. The results were: level 2.0 for tertiary hospitals, level 4.3 for general hospitals, and level 6.9 for clinics. Therefore, for every 10 beds, the number of nurses in levels 2, 4, and 7 were used for tertiary hospitals, general hospitals, and clinics respectively.

〈Table 17〉 Estimation of the Necessary Number of Additional Nurses: Alternative 1

Category	Necessary number of nurses for 10 beds	Number of existing nurses for 10 beds	Necessary number of additional nurses for 10 beds	Weighted value by the type of medical institution (Number of beds)
Tertiary hospitals	6.87	4.44	2.43	16.2%
General hospitals	4.08	2.67	1.42	37.3%
Clinics	3.18	1.54	1.64	46.5%
Necessary number of nurses for 10 beds			1.69	100.0%

III

The Possible Number of New Beds and Hospitals

1. The Possible Number of New Beds and Hospitals
2. Possible Number of New Beds by the Type of Medical Institution (until 2022)

Ⅲ The Possible Number of New Beds and Hospitals

1. The Possible Number of New Beds and Hospitals

Possible number of new beds	=	Number of additional nurses for integrated nursing wards	×	10 beds	÷	1.69 people	
Possible number of new hospitals	=	{Possible number of new beds	−	Possible number of new beds in existing hospitals}	÷	45 (1 ward=45 beds)	

□ **(Possible number of new beds)** The possible number of new beds can be calculated based on **the estimated supply and demand of nurses.**

○ **The possible number of new beds can be calculated** by dividing the number of additional integrated nursing ward nurses by 1.69, the necessary number of additional nurses for every 10 beds.

□ **(Possible number of new hospitals)** In order to calculate the possible number of new hospitals, it is important to categorize the possible number of new beds into the number of new beds that can be increased in existing hospitals and the number of new beds that can be increased in new hospitals.

○ An examination of the increase in the number of beds in participating hospitals showed that the about 55 percent of new beds were installed in existing hospitals.

○ Assuming that this situation would be maintained for the short-term, for 50 percent in Alternative 1 calculated above, the number of new beds that can be created is 9,895 as of 2017. Among them, 5,442 beds can be newly installed in existing hospitals, and 4,452 beds can be created in new hospitals.

○ Assuming that only one ward participates in new hospitals, the possible number of new hospitals can be calculated by dividing t**he possible number of new beds in new hospitals by the number of beds in a ward (45 beds).**

〈Table 18〉 Estimation of the Possible Number of New Beds and Hospitals Based on the Estimated Supply and Demand of Nursing Personnel (2017-2022)

Category		2017	2018	2019	2020	2021	2022	'17~22
Scenario 1 (50%) Present level	Increased number of people	1,668	1,718	1,787	1,787	1,787	1,826	10,573
	Possible number of new beds=A	9,894	10,193	10,603	10,603	10,603	10,831	62,728
	Possible number of new beds in existing hospitals (B=A*0.55)	5,442	5,606	5,832	5,832	5,832	5,957	34,500
	Possible number of new beds in new hospitals (C=A-B)	4,452	4,587	4,771	4,771	4,771	4,874	28,228
	Possible number of new hospitals (D=C/45)	99	102	106	106	106	108	627
Scenario 2 (60%)	Increased number of people	2,001	2,062	2,145	2,145	2,145	2,191	12,688
	Possible number of new beds =A	11,873	12,232	12,724	12,724	12,724	12,997	75,274
	Possible number of new beds in existing hospitals	6,530	6,728	6,998	6,998	6,998	7,149	41,401
	Possible number of new beds in new hospitals	5,343	5,504	5,726	5,726	5,726	5,849	33,873
	Possible number of new hospitals	119	122	127	127	127	130	753
Scenario 3 (75%)	Increased number of people	2,502	2,577	2,681	2,681	2,681	2,739	15,860
	Possible number of new beds =A	14,841	15,290	15,905	15,905	15,905	16,247	94,092
	Possible number of new beds in existing hospitals	8,162	8,409	8,748	8,748	8,748	8,936	51,751
	Possible number of new beds in new hospitals	6,678	6,880	7,157	7,157	7,157	7,311	42,341
	Possible number of new hospitals	148	153	159	159	159	162	941
Scenario 4 (100%)	Increased number of people	3,335	3,436	3,575	3,575	3,575	3,651	21,147
	Possible number of new beds =A	19,788	20,386	21,207	21,207	21,207	21,662	125,456
	Possible number of new beds in existing hospitals	10,883	11,213	11,664	11,664	11,664	11,914	69,001

Category		2017	2018	2019	2020	2021	2022	'17~22
	Possible number of new beds in new hospitals	8,905	9,174	9,543	9,543	9,543	9,748	56,455
	Possible number of new hospitals	198	204	212	212	212	217	1,255

Note: 1) The progress of new beds in participating hospitals shows that about 55 percent of new beds were added to existing hospitals, while 45 percent were added to new hospitals. Using this percentage, the number of new beds in existing hospitals for each year was estimated (new beds in existing hospitals: new beds in new hospitals = 55:45)

2. Possible Number of New Beds by the Type of Medical Institution (until 2022)

1) A Scenario for Increase in the Number of Beds

□ For this study, it is possible to estimate the possible number of new beds for Integrated Nursing Care Service by medical institution up to and including 2022, as the number of nursing school graduates is fixed to a certain extent.

□ In order to estimate the possible number of new beds by the type of medical institution, this study assumed the following:

○ First, for the ease of calculation, the possible number of new beds by the type of medical institution was estimated by **fixing the possible number of new beds per year at 10,000 based on the additional supply of nursing personnel in Scenario 1 (present condition).**

- Additionally, in consideration of the differences in the necessary number of additional nurses for different types of medical institutions, the possible number of new beds by the type of medical institution was estimated without fixing the possible number of new beds per year.

○ Second, the **possible number of new beds by the type of medical institution was estimated relative to the percentages of beds in different medical institutions.**

○ Third, the possible number of new beds by the type of medical institution was estimated under the assumption that tertiary hospitals and general hospitals, which primarily have wards for acute disease patients and therefore have a higher demand for nursing and care, participate before others, regardless of the percentage of hospital beds.

○ Fourth, tertiary hospitals are only allowed to participate for up to two wards. Therefore the calculation assumed that 43 tertiary hospitals would add one ward per year in phases for the next three years (2017-2019) (43 hospitals × 45 beds ÷ 3 years = approx. 640 per year)

○ Fifth, **in consideration of policy variation, this study also calculated the number of hospital beds under the additional assumption that the limits on the number of wards would be lifted starting in 2020 when over half of the target hospitals as well as all general hospitals will be participating.**

□ Based on the above assumptions of "reflecting or not reflecting the level of necessity of nursing care" and

"maintaining or lifting the limits on the number of participating wards in tertiary hospitals," this study ultimately selected four scenarios for the roadmap for the expansion of the Integrated Nursing and Care Service from 2017 to 2022.

〈Table 19〉 Scenarios for the Estimation of the Possible Number of Hospital Beds by the Type of Medical Institution

Category		Fixed number of total beds	
		Limits on the number of participating wards from tertiary hospitals	
		Maintains the limits	Abolishes the limits
Reflection of the necessary number of nurses	Not reflected	Scenario 1-1	Scenario 2-1
	Reflected	Scenario 1-2	Scenario 2-2

2) Results from the Expansion Scenarios by Composition

□ Assuming that the number of new beds is 10,000 a year, results from the estimation of the possible number of new beds by the type of medical institution are as follows:

〈Table 20〉 Summary of the Estimated Results of the Roadmap for the Expansion of the Integrated Nursing and Care Service: Increased Number of Beds by 2022

Scenario			Tertiary hospitals		General hospitals		Clinics		Total
			N	%	N	%	N	%	N
Total			39,932	100.0%	92,322	100.0%	115,041	100.0%	247,295
Limit on the number of wards in tertiary hospitals	Nursing care need not reflected	Scenario 1-1	4,243	10.6%	34,504	37.4%	39,899	34.7%	78,646
	Nursing care need reflected	Scenario 1-2	4,243	10.6%	61,548	66.7%	12,855	11.2%	78,646
No limit on the number of wards in tertiary hospitals	Nursing care need not reflected	Scenario 2-1	9,631	24.1%	32,228	34.9%	36,787	32.0%	78,646
	Nursing care need reflected	Scenario 2-2	23,959	60.0%	36,929	40.0%	17,758	15.4%	78,646

○ **(Scenario 1-1) This scenario assumes that: 1) the restriction on the number of beds in tertiary hospitals will be in place until 2022, and 2) the number of beds will be increased based on the bed occupancy rate without reflecting the degree of need for nursing care.**

- As the restriction on the number of beds in tertiary hospitals is in place, only a total of 4,243 new beds (10.6 percent of beds in tertiary hospitals) will be created by 2022.
- The number of beds in general hospitals and clinics were increased without reflecting the degree of need for nursing. In this scenario, 34,504 beds (37.4

percent of beds in general hospitals) are expected to be increased in general hospitals by 2022, while 39,899 beds (34.7 percent of beds in clinics) are expected to be increased in clinics by 2022.

○ **(Scenario 1-2)** This scenario assumes that: 1) the restriction on the number of beds in tertiary hospitals will be in place until 2022, and 2) **the number of beds will be increased mainly in tertiary hospitals and general hospitals,** reflecting the degree of need for nursing care.

- The **increased number of beds in tertiary hospitals** is the same as Scenario 1-1.
- However, as the number of beds in general hospitals and clinics are assumed to be increased based on the degree of need for nursing care, this scenario **assumes that the number of beds in general hospitals will be increased more than in clinics. A total of 61,548 beds (66.7 percent of beds in general hospitals) are expected to be increased in general hospitals by 2022, while a total of 12,855 beds (11.2 percent of beds in clinics) are expected to be increased in clinics by 2022.**
- The **degree of need for nursing care was reflected, with a priority on general hospitals.** An examination of the average inpatient bed occupancy rate by nurse staffing level in general hospitals with less than 500

beds shows that **inpatient bed occupancy rate begin to decrease dramatically starting from level 7.**

- Low inpatient bed occupancy rate means low demand for service, which reflects the **difficulty in participating in the service in reality.**
- **The inpatient bed occupancy rate of level 7 and no-level general hospitals** accounts for **about 20 percent of all beds in general hospitals.**
- Previous increases of beds in general hospitals designated as leading hospitals show that maximum 78.9 percent of general ward beds were added.
- Taking all this information comprehensively, the possible number of new beds in general hospitals by 2022 was decided to be about 70 percent of beds in general hospitals.

○ **(Scenario 2-1)** This scenario assumes that: 1) the restriction on the number of beds in tertiary hospitals will be abolished in 2020, and 2) the number of beds will be increased **based on the bed occupancy rate without reflecting the degree of need for nursing care.**

- This scenario assumes that a **total of 9,631 new beds (24.1 percent of beds in tertiary hospitals)** will be created by 2022, which is **2.3 times more than the number of beds increased** with the restriction on beds

in tertiary hospitals in place.

- This scenario also assumes that the number of beds is increased in a similar rate as the inpatient bed **occupancy rate by the type of medical institutions** (tertiary hospitals, general hospitals, and clinics), with a **total of 32,228 beds (34.9 percent of beds in general hospitals) added in general hospitals and 36,787 beds (32 percent of beds in clinics) in clinics.**

○ **(Scenario 2-2)** This scenario assumes that: 1) the restriction on the number of beds in tertiary hospitals will be abolished in 2020, and 2) **the number of beds will be increased mainly in tertiary hospitals and general hospitals,** reflecting the degree of need for nursing care.

- This scenario assumes that a t**otal of 23,959 new beds (60 percent of beds in tertiary hospitals)** will be created by 2022, which is **5.6 times more than the number of beds increased with the restriction on beds** in tertiary hospitals in place.

- This scenario also assumes that the **number of beds is increased mainly in tertiary hospitals and general hospitals,** where there is a higher degree of need for nursing care, with a **total of 36,929 new beds (40 percent of beds in general hospitals) in general hospitals and 17,758 new beds (15.4 percent of beds in clinics) in clinics.**

- The **degree of need for nursing care** was reflected, **with a priority on tertiary hospitals**. Previous increases of beds in tertiary hospitals designated as leading hospitals show that **beds were increased by up to 65 percent.**
- Taking all this information comprehensively, the **possible number of new beds in tertiary hospitals by 2022 was decided to be about 60 percent of beds in tertiary hospitals.**

3) Estimation Results by Scenario

〈Table 21〉 Estimation of the Possible Number of New Beds by the Type of Medical Institution: Scenario 1-1 (The degree of nursing need is not reflected, and the restriction on the number of beds is maintained)

Category			2016	2017	2018	2019	2020	2021	2022	2017-2022
Number of beds	New	Total	-	10,000	10,000	10,000	10,000	10,000	10,000	**60,000**
		Tertiary hospitals	-	910	640	640	-	-	-	**2,190**
		General hospitals	-	3,838	3,952	3,952	4,223	4,223	4,223	**24,411**
		Clinics	-	5,252	5,408	5,408	5,777	5,777	5,777	**33,399**
	Cumulative	Total	18,646	28,646	38,646	48,646	58,646	68,646	**78,646**	
		Tertiary hospitals	2,053	2,963	3,603	4,243	4,243	4,243	**4,243**	
		General hospitals	10,093	13,931	17,884	21,836	26,059	30,282	**34,504**	
		Clinics	6,500	11,752	17,159	22,567	28,344	34,121	**39,899**	
Number of nurses	Additional	Total	-	1,627	1,604	1,604	1,547	1,547	1,547	**9,476**
		Tertiary hospitals	-	221	156	156	-	-	-	**532**
		General hospitals	-	545	561	561	600	600	600	**3,466**
		Clinics	-	861	887	887	947	947	947	**5,477**

〈Table 22〉 Estimation of the Possible Number of New Beds by the Type of Medical Institution: Scenario 1-2 (The degree of nursing need is reflected, and the restriction on the number of beds is maintained)

Category			2016	2017	2018	2019	2020	2021	2022	2017-2022
Number of beds	New	Total		10,000	10,000	10,000	10,000	10,000	10,000	**60,000**
		Tertiary		910	640	640	-	-	-	**2,190**
		General		8,576	8,576	8,576	8,576	8,576	8,576	**51,455**
		Clinic		514	784	784	1,424	1,424	1,424	**6,355**
	Cumulative	Total	18,646	28,646	38,646	48,646	58,646	68,646	**78,646**	
		Tertiary	2,053	2,963	3,603	4,243	4,243	4,243	**4,243**	
		General	10,093	18,669	27,245	35,821	44,396	52,972	**61,548**	
		Clinic	6,500	7,014	7,798	8,583	10,007	11,431	**12,855**	
Number of nurses	Additional	Total		1,728	1,696	1,696	1,620	1,620	1,620	**9,981**
		Tertiary		245	172	172	-	-	-	**589**
		General		1,406	1,406	1,406	1,406	1,406	1,406	**8,439**
		Clinic		77	118	118	214	214	214	**953**

〈Table 23〉 Estimation of the Possible Number of New Beds by the Type of Medical Institution: Scenario 2-1 (The degree of nursing need is not reflected, and the restriction on the number of beds is lifted)

Category			2016	2017	2018	2019	2020	2021	2022	2017-2022
Number of beds	New	Total		10,000	10,000	10,000	10,000	10,000	10,000	**60,000**
		Tertiary		910	640	640	1,796	1,796	1,796	**7,578**
		General		3,838	3,952	3,952	3,464	3,464	3,464	**22,135**
		Clinic		5,252	5,408	5,408	4,740	4,740	4,740	**30,287**
	Cumulative	Total	18,646	28,646	38,646	48,646	58,646	68,646	**78,646**	
		Tertiary	2,053	2,963	3,603	4,243	6,039	7,835	**9,631**	
		General	10,093	13,931	17,884	21,836	25,300	28,764	**32,228**	
		Clinic	6,500	11,752	17,159	22,567	27,307	32,047	**36,787**	
Number of nurses	Additional	Total		1,662	1,631	1,631	1,762	1,762	1,762	**10,212**
		Tertiary		245	172	172	483	483	483	**2,038**
		General		630	648	648	568	568	568	**3,630**
		Clinic		788	811	811	711	711	711	**4,543**

〈Table 24〉 Estimation of the Possible Number of New Beds by the Type of Medical Institution: Scenario 2-2 (The degree of nursing need is reflected, and the restriction on the number of beds is abolished)

Category			2016	2017	2018	2019	2020	2021	2022	2017-2022
Number of beds	New	Total		10,000	10,000	10,000	10,000	10,000	10,000	**60,000**
		Tertiary		910	640	640	5,241	5,241	5,241	**17,913**
		General		8,416	8,416	8,416	3,607	3,607	3,607	**36,068**
		Clinic		674	944	944	1,152	1,152	1,152	**6,019**
	Cumulative	Total	18,646	28,646	38,646	48,646	58,646	68,646	78,646	
		Tertiary	2,053	2,963	3,603	4,243	9,484	14,725	19,966	
		General	10,093	18,509	26,925	35,341	38,947	42,554	46,161	
		Clinic	6,500	7,174	8,118	9,062	10,215	11,367	12,519	
Number of nurses	Additional	Total		1,527	1,505	1,505	1,975	1,975	1,975	**10,462**
		Tertiary		221	156	156	1,274	1,274	1,274	**4,353**
		General		1,195	1,195	1,195	512	512	512	**5,122**
		Clinic		111	155	155	189	189	189	**987**

4) Results of the Expansion Scenarios: Variability of the Total Number of Hospital Beds

□ The **expansion scenarios proposed above calculated the possible number of new beds by the type of medical institution** under the assumption that the **possible number of new beds was 10,000 per year.**

○ However, as the **necessary number of additional nurses per bed differs by the type of medical institutions, the possible number of new beds may vary** depending on the **distribution ratio of different types of medical institutions.**

○ Therefore the **possible number of new beds was calculated** by scenario proposed above.

□ In this study, the number of additional nurses assigned to integrated nursing wards was estimated to be 10,573 from 2017 to 2022.

○ The **possible number of new beds from 2017 to 2022, aside from the 10,000 new beds, was calculated** based on the necessary number of additional nurses, which was calculated by subtracting the number of nurses necessary for 10,000 new beds every year from the number of additional nurses assigned to integrated nursing wards.

○ Results showed that **659 to 6,508 new beds were possible to be installed** in hospitals by scenario.

〈Table 25〉 Possible Number of New Beds by Expansion Scenario

Category		Scenario 1-1 (limit on tertiary hospitals without need)	Scenario 1-2 (limit on tertiary hospitals with need)	Scenario 2-1 (limit on tertiary hospitals without need)	Scenario 2-2 (limit on tertiary hospitals with need)
Increased number of beds A	Total	60,000	60,000	60,000	60,000
	Tertiary	2,190	2,190	7,578	17,913
	General	24,411	51,455	22,135	36,068
	Clinic	33,399	6,355	30,287	6,019
Necessary number of nurses for 10,000 new beds per year	**Total**	**9,476**	**9,981**	**10,212**	**10,462**
	Tertiary	532	589	2,038	4,353
	General	3,466	8,439	3,630	5,122
	Clinic	5,477	953	4,543	987
Possible number of additional nurses		1,097	592	361	111
Possible number of new beds B (for 10 beds=1.69)		6,508	3,512	2,142	659
C = A + B		66,508	63,512	62,142	60,659

□ At the beginning of the demonstration project, medical institutions stated that the major reason for their hesitation in participating in the Integrated Nursing and Car Service was the "**lack of reasonable compensation and nursing personnel.**"

○ However, it is now believed that the satisfaction for the compensation has been met for medical institutions through the **improvement of insurance cost plans based**

on prime costs and the development of an incentive system.

○ However, the lack of nursing personnel is **a problem that cannot be resolved in the short-term, and continues to be a difficult issue.**

□ The introduction and failure of Japan's Complete Nursing Care System and the expansion of Korea's Integrated Nursing and Care Service show that **securing nursing personnel is the most important prerequisite for the successful operation and expansion of the Integrated Nursing and Care Service.**

○ The Integrated Nursing and Care Service is an important program for **relieving the burden on caregiver costs, one of the three costs that are not covered by insurance,** which was the most burdensome for patients in the over 40 years of history of health insurance in Korea.

○ Korea has also learned its vulnerabilities in managing nosocomial infections through the 2015 MERS outbreak, which revealed how **problematic the traditional nursing care culture is**, centered on family and private caregivers.

□ Therefore, **for the systematization of the Integrated Nursing and Care Service**, it is time to actively **establish measures to secure nursing personnel.**

Ⅳ

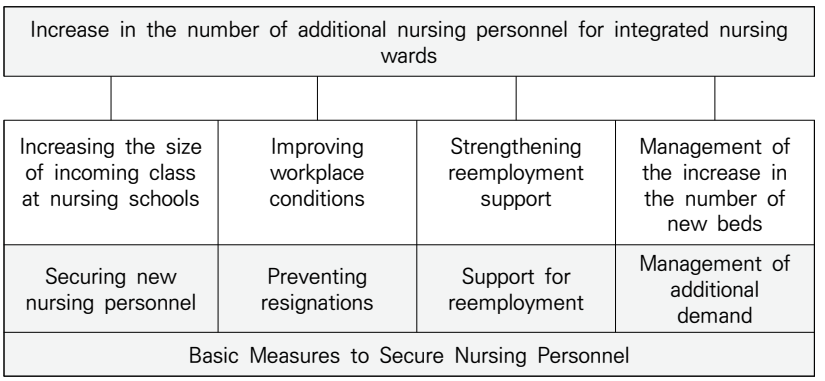
Policy Suggestions:
Measures to Secure Additional Nursing Personnel for Integrated Nursing Wards

1. Securing New Nursing Personnel
2. Preventing Resignations
3. Support for Reemployment
4. Management of Additional Demand

Ⅳ Policy Suggestions : Measures to Secure Additional Nursing Personnel for Integrated Nursing Wards

□ A review of cases in foreign countries, such as Japan, shows that there are **largely four basic approaches to securing nursing personnel.**

[Figure 4] Overview of the Measures to Secure Additional Nursing Personnel for Integrated Nursing Wards



1. Securing New Nursing Personnel

□ **(Securing new nursing personnel)** The most basic measure to increase the number of additional nursing personnel for integrated nursing wards is to **increase the absolute number of nursing personnel,** which can be accomplished by **increasing the size of incoming classes at nursing schools.**

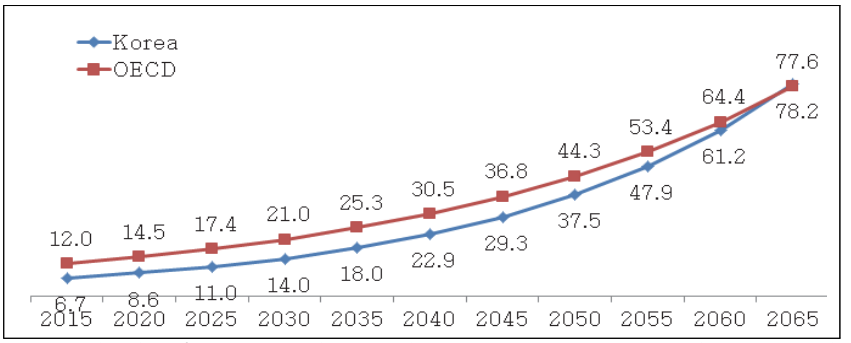
○ Japan continuously **increased the size of incoming classes at nursing schools before the introduction of the new nursing system**, and continued to **increase the class sizes by approximately 2,000 to 4,000 every year after the introduction of the new nursing system.**

○ Some critics have pointed out that the **policy for increasing the size of incoming classes tend to be focused on big hospitals, resulting in the increase of idle manpower** rather than fundamentally resolving the shortage of nurses in regional hospitals or small- or medium-sized hospitals. Other critics have also noted that the size of incoming classes at nursing schools in Korea is **higher than the OECD average.**

○ However, compared to OECD countries, the **number of registered nurses in Korea is only about half (55.4 percent) of the OECD average**, and the **number of clinical nurses is much lower at 39.5 percent of the OECD average.**

○ Moreover, the number of nursing school graduates in Korea is only **1.2 times higher than the OECD average**. If this trend continues, **it would take many years for Korea to close the gap between the number of nurses in Korea and the OECD average.**

[Figure 5] Comparison of the Number of Nurses: South Korea vs. OECD Average (the figures reflect the rate of increase in the number of nursing school graduates)



Note: The data for nursing school graduates in Korea is only available up to and including 2015. Therefore for Korea, the annual average rate of increase from 2011 to 2015 was used to calculate the number of nurses in the future, while the OECD average was calculated using the annual average rate of increase from 2010 to 2014.

Source: referred to OECD Health Data 2016.

□ At a time **when there is an absolute shortage of nurses,** there is a limit to resolving this nursing personnel shortage issue though policies **for reducing the number of existing nurses leaving their occupation by improving work conditions.**

○ Therefore, in consideration of the soaring demand for nursing personnel through the expansion of the Integrated Nursing and Care Service, as well as the level of supply of nursing personnel today, it is advisable to pursue two policies simultaneously: **1) a policy to increase the supply of new nurses by increasing the size of incoming classes at nursing schools**, and **2) a policy to**

reduce the number of nurses leaving their occupation by improving work conditions

2. Preventing Resignations

□ (Resignation prevention) The policy to increase the number of registered nurses by increasing the size of incoming classes is rendered ineffective if nursing school graduates do not work nurses. Therefore it is necessary to prevent nurses from leaving their jobs by improving their working conditions.

□ If the percentage of additional clinical nurses among the number of additional registered nurses is increased from 50 percent to 60 percent or 70 percent, additional 1,791 to 3,577 nurses can be secured every year.

〈Table 26〉 Number of Additional Clinical Nurses With the Increase in the Percentage of Clinical Nurses Among Registered Nurses is

Category	Additional registered nurses	Additional clinical nurses			Number of additional clinical nurses, if the percentage of clinical nurses is increased	
		50%	60%	70%	60%	70%
2017	17,862	8,926	10,717	12,503	1,791	3,577
2018	18,402	9,196	11,041	12,882	1,845	3,686
2019	19,143	9,566	11,486	13,400	1,920	3,834
2020	19,143	9,566	11,486	13,400	1,920	3,834
2021	19,143	9,566	11,486	13,400	1,920	3,834
2022	19,554	9,771	11,732	13,688	1,961	3,916
Cumulative number of additional clinical nurses, if the pecentage of clinical nurses is increased					11,357	22,681

□ In this way, when **the number of clinical nurses increases** with the increased percentage of clinical nurses, the **number of additional ward nurses will increase,** which can ultimately **increase the number of possible additional nurses assigned to integrated nursing wards.**

○ If the percentage of clinical nurses is increased from 50 percent today to **60 percent in the future, additional 700 ward nurses can be hired every year**; if the percentage of clinical nurses is increased from 50 percent today to **70 percent in the future, additional 1,400 nurses can be hired every year.**

○ Cumulatively, from 2017 to 2022, if the percentage of clinical nurses is increased from 50 percent today to **60 percent in the future, additional 4,243 nurses can be secured**; if the percentage of clinical nurses is increased from 50 percent today to **70 percent in the future,**

additional 8,475 nurses can be secured.

〈Table 27〉 Number of Additional Ward Nurses with a Higher Ratio of Additional Clinical Nurses Compared to Additional Registered Nurses

Category	Number of additional clinical nurses with a higher percentage of clinical nurses		Number of additional ward nurses with a higher percentage of clinical nurses	
	60%	70%	60%	70%
2017	1,791	3,577	669	1,337
2018	1,845	3,686	690	1,377
2019	1,920	3,834	717	1,433
2020	1,920	3,834	717	1,433
2021	1,920	3,834	717	1,433
2022	1,961	3,916	733	1,463
	11,357	**22,681**	**4,243**	**8,475**

3. Support for Reemployment

□ **(Reemployment support)** It is important to s**trengthen the reemployment support for the nurses who can be reemployed** by assessing the number of idle registered nurses who are currently not working.

□ As described in a previous section, the number of registered nurses in Korea who can be additionally assigned to integrated nursing wards is **estimated to be in the range of 1,718 (when assigning 50 percent of additional ward nurses to integrated nursing wards: current level) to 3,435 (when assigning 100 percent of additional ward nurses to integrated nursing wards).**

○ The number of beds that can be **increased by reemploying nurses who can be realistically assigned to integrated nursing wards** among the 105,060 idle nurses

in Korea is between **10,000 and 20,000 beds.**

○ In other words, **even if there is a large number of idle nurses, utilizing the maximum number of idle nurses** only results in the increase of **10,000 to 20,000 beds.**

□ Therefore **securing additional nurses for integrated nursing wards is limited to a certain extent** at this time.

○ Nevertheless, in order to **improve the effectiveness of the reemployment support policy,** it is necessary to assess the number of idle nursing personnel, **find those who are likely to look for reemployment**, and implement a **policy to provide strengthened and customized support for them.**

4. Management of Additional Demand

□ **(Additional demand management) Securing additional beds requires additional nursing personnel,** which could ultimately result in **worsening the shortage of nursing personnel.**

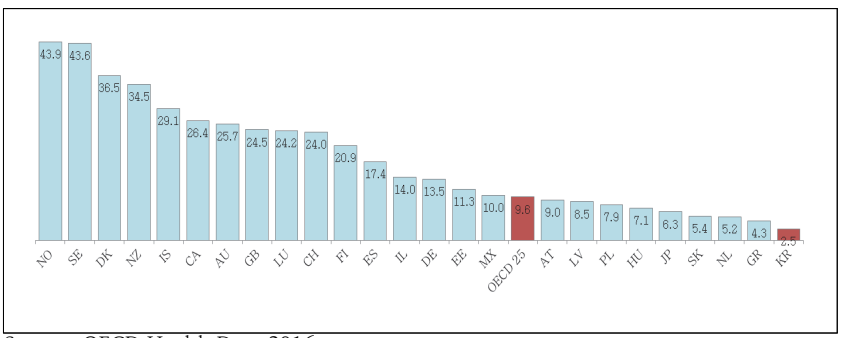
○ For balanced supply and demand of nursing personnel, it is necessary for the **government to establish a supply and demand plan for hospital beds** and, in relation, a **supply and demand plan for nursing personnel as well.**

□ **(Total number of clinical nurses per bed)** An **increase in the number of hospital beds results in an increase in demand for nursing personnel, necessary for the increased number of beds.** Ultimately, if the rate of increase in the number of nursing personnel cannot keep up with the rate of increase in the number of beds, increasing the number of beds will result in **worsening the nursing personnel shortage problem.**

○ The **number of clinical nurses for 100 beds in Korea was the lowest among OECD countries**, due to a **small number of clinical nurses and a sharp increase in the number of hospital beds.**

○ Korea has 2.5 **clinical nurses for 100 beds,** which is only about **26 percent of the OECD average (9.6 clinical nurses** for 100 beds), and about **40 percent of that of Japan (6.3 clinical nurses** for 100 beds).

[Figure 6] Number of Clinical Nurses per 100 Hospital Beds by Country



Source: OECD Health Data 2016

□ Currently, South Korea lacks the mechanism to comprehensively manage the increase in the number of beds in medical institutions. As a result, South Korea has the **most number of inpatient beds among OECD countries.**

○ The number of new hospital beds installed in hospitals in the Seoul Metropolitan Area over the past decade is estimated to be about 11,842.

〈Table 28〉 Installation of More Beds in Hospitals in the Seoul Metropolitan Area: 2005-2015

2005-2007	2008	2009-2015
Severance Hospital (1004 beds) Konkuk University Medical Center (872 beds) Kyung Hee University East-West Neo Medical Center (650 beds) Chung-Ang University Hospital (562 beds) Dongguk University Ilsan Hospital (500 beds)	Samsung Medical Center Cancer Center (652 beds) Asan Medical Center (772 beds) Korea University Guro Hospital (430 beds) Seoul National University Boramae Medical Center (400 beds)	Seoul St. Mary's Hospital (1200 beds) Seoul National University Hospital in Osan (600 beds) Yongin Severance Hospital (1000 beds) Kyung Hee University Hospital at Yongin (800 beds) Suwon Eulji Medical Center (1000 beds) Hallym University Medical Center in Hwaseong (800 beds) Seoul Veterans Health Service Medical Center (600 beds)
3,588 hospital beds	2,254 hospital beds	6,000 hospital beds

○ In addition, five hospitals in the Seoul Metropolitan Area are expected to provide 4,100 additional beds between 2017 and 2021.

〈Table 29〉 New University Hospitals Expected to Open in the Seoul Metropolitan Area (up to 2021)

Hospital	Area	Number of Beds
Ewha Womans University Magok Hospital	Gangseo-gu, Seoul	1000
Eunpyeong St. Mary's Hospital	Eunpyeong-gu, Seoul	800
Dongbaek Severance Hospital	Yongin-si, Gyeonggi-do	800
Seoul National University Hospital in Siheung	Siheung-si, Gyeonggi-do	300
Uijeongbu Eulji University Medical Center	Uijeongbu-si, Gyeonggi-do	1234

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