

An Analysis of Actual States of the Nursing Grade of Medical Institutions

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Abstract

Purpose. This study pursued the way for the effective application of the differentiated charge (Nursing grading system) by the nursing manpower which is performed for the nursing service quality improvement to the in-patients in Korea and the minimum employment problem solution of nurses.

Methods. For this matter, the status of the nursing grade for 1,452 hospitals (44 high class general hospitals, 259 general hospitals, 265 hospitals, 59 oriental medicine hospitals and 825 recuperation hospitals) was identified which were registered in the Health Insurance Review and Assessment Service in March 2011 status quo.

Results. In the most nursing grade by the kind of medical institutions, 70.5% of the nurses were third-graded in upper general hospitals, 38.1% were sixth graded in general hospitals, 62.7% were seventh-graded in oriental medicine hospitals and 40.4% were first-graded in recuperation hospitals. In the nursing grade by the scale of hospitals (in terms of the number of beds), there was a significant difference in general hospitals, but there was no significant difference between oriental medicine hospitals and recuperation hospitals. In the nursing grade by the location of hospitals and the foundation type of hospitals, there was a significant difference between general hospitals and recuperation hospitals.

Conclusion. For the effectiveness of applying differentiated nursing fees by the number of nurses, it seems necessary to consider adjusting the present differentiated inpatient-charge system for the better so that small and medium-sized hospitals may induce more nurses.

Key words: Location of hospital, Nursing grading system, Scale of the hospital, Type of hospital

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1. Introduction

Most of the advanced countries including the U. S. have put lots of effort into providing ground for how patients' health change depending on the number of nurses and the composition of nursing human resources. Besides, they also pay attention to making policies for medical institutions to secure a proper number of nurses because it is essential for patients' safety and health¹⁾.

According to OECD²⁾, its average number of nurses per bed in an acute-phase hospital is 1.00, particularly 1.75 in Norway, 1.61 in Australia, 1.56 in the U. S. and 0.33 in Korea.

According to Wisconsin Organization of Nurse Executives³⁾, nurses are human resources having important effect on patients' health and satisfaction because they take the closest care of patients. However, since it costs a great deal of money to secure a proper number of nurses, most of the advanced countries have constantly conducted researches on how to sustain the optimal balance in a dilemma between the quality and expense of nursing services for patients¹⁾.

Even in the medical care benefit expenses in accordance with National Health Insurance Act in Korea, graded medical costs are applied by the medical human resources and the nursing human resources at present, and to improve the quality of nursing services for patients, Differentiated Inpatient Nursing Fees has been in force since Nov. 1999 when it was first introduced.

When it comes to examining all the main processes of Nurse Staffing Grade⁴⁾, Differentiated Inpatient Nursing Fees (1st to 6th grade), in accordance with the number of nursing staff against the number of beds in a general ward was first introduced in Nov. 15,

1999, and its grading standard was provided in 2000. In April 2000, it specified the addition of nursing fees and the addition rate of fixed inpatient charges, and in July 2000, its half year-based estimation changed to a quarterly estimation, and in Jan. 2001, a detailed standard of estimation was provided for the number of beds and nurses. In April 2007, all the hospitals and general hospitals changed their basic inpatient charge addition method to a graded inpatient-charge addition method, and by deleting the previous nursing fee addition rates and specifying only inpatient-charge additions, hospitals revised the 5-grade addition method upwards from 10% to 15%, while general hospitals revised the 3-grade addition rate upwards from 10% to 15%. However, since most hospitals belonged to the 6th grade, and a number of general hospitals were the 4th-graded ones, the existing grade system was more subdivided into 7 grades, and the inpatient charge was reduced (5% of the inpatient charge is reduced when the number of beds is over 6.0 per a nurse) in order to resolve the minimum employment problem. Despite such an adjustment, practical differentiated charges were not provided because the majority of hospitals were classified into the 7th grade, the grade standard was reestablished with regional differentiation in accordance with Enforcement Regulation 7-4 of the Income Tax Act issued in Feb. 2008, particularly upgrading medical care institutions located in medically-vulnerable areas into the 6th grade and reducing 5% of the inpatient charge for the 7th-grade hospitals located in metropolitan cities and 2% for the 7th-grade hospitals in other areas.

According to some previous researches on Nursing Staffing Grade¹⁾, especially on the trend of nursing grades, Kim Yun-Mi et al., said that upper general hospitals and general

hospitals have a possibility of upgrading their nursing grades 80 times and 1] times respectively higher than hospitals, and Park et al.⁵⁾, conducted a research on the comparison of nurses' nursing hours by the change of nursing grades in a university hospital and they said that when the hospital's nursing grade was one grade higher, both direct and indirect nursing hours were reduced per nurse, but it did not make a significant difference, and a nurse had more direct nursing hours when on daytime duty instead.

Besides, Yoon et al.⁶⁾, conducted a research on general-ward nurses' awareness of nursing grades related to the nursing behavior service fee, and it was found that 65.5% of the nurses carrying out nursing activities were not aware of nursing grades of their hospitals. On the other hand, as a result of investigating the relation between their awareness of the quality of nursing care provided to patients (fidelity to the medical process, provision of medical information, management of direct nursing activities, and the degree of issuing prescriptions related to nursing activities) and their hospitals' nursing grades, it was found that there was a positive relation between the nursing grade and the degree of performing nursing activities.

Accordingly, this study aims to investigate the actual states of nursing grades of Korean medical institutions by the size of a hospital and the type of hospital establishment and devise a plan for the effectiveness of applying differentiated nursing fees (Nurse Staffing Grade) depending on the number of nursing staff, which is enforced to improve the quality of nursing services for inpatients and resolve nurses' minimum employment problem.

2. Methodology

2.1. Research Methods

To devise a plan for the effectiveness of applying differentiated nursing fees (Nurse Staffing Grade) depending on the number of nursing staff, which is enforced to improve the quality of nursing services for patients and resolve nurses' minimum employment problem, this study investigated the nursing grades of 1,452 medical institutions over the level of hospitals, listed on Health Insurance Review & Assessment Service as of March 2011, except dental clinics.

By investigating the nursing grades of 1,425 medical institutions above, this study attempted to describe proper cases and find out the relative value score of inpatient charge in each kind of a hospital when the differentiated inpatient-charge system is applied according to the hospital rank standard (the number of beds per nurse) and the number of nursing staffs. Then, this study intends to analyze the actual states of Nurse Staffing Grade for each kind of a medical institution by investigating nursing grades by the kind of a medical institution, the size of a medical institution (the number of beds), the location of a medical institution through chi-square test.

3. Results

3.1. Analysis Subjects & Data Collection

This study used information [8] registered on Health Insurance Review & Assessment Service as of Mar. 2011, and as analysis subjects, this study selected a total of 1,452 medical institutions, as shown in Table 1, 44 upper general hospitals(3.0%), 259 general hospitals (17.8%), 265 hospitals(18.3%), 59 oriental

medicine hospitals (4.1%), and 825 geriatric hospitals(56.8%).

Table 1. A Composition of Analysis Subjects

Section		Frequency (Unit)	Ratio (%)
Kind of Medical Institution	Upper General Hospital	44	3.0
	General Hospital	259	17.8
	Hospital	265	18.3
	Oriental Medicine Hospital	59	4.1
	Geriatric Hospital	825	56.8
Total		1,452	100.0

3.2. Actual States of Nursing Grades in Each Kind of a Medical Institution

Table 2 shows the actual states of nursing grades in each kind of a medical institution.

70.5% of the upper general hospitals(31) belong to the 3rd grade, followed by 20.5%(9) in the 2nd grade, 6.8%(3) in the 1st grade, 2.3%(1) in the 4th grade. 24.7% of the general hospitals belong to the 3rd grade (64), followed by 19.3%(50) in the 7th grade, 17.4%(45) in the 6th grade, 13.5%(35) in the 4th grade, 12.0%(31) in the 2nd grade, 10.4%(27) in the 5th grade and 2.7%(7) in the 1st grade.

38.1%(101) of the hospitals belong to the 6th grade, followed by 15.8%(42) in the 3rd grade, 14.7%(39) in the 4th grade, 10.9%(29) in the 2nd grade, 5.7%(15) in the 7th grade and 3.0%(8) in the 1st grade. 62.7%(37) of the oriental medicine hospitals belong to the 7th grade, followed by 13.6%(8) in the 5th and 6th grade respectively, 6.8%(4) in the 4th grade and 3.4%(2) in the 3rd grade. Lastly, 40.0%(330) of the geriatric hospitals belong to the 1st grade, followed by 35.3%(291) in the 2nd grade, 12.5%(103) in the 3rd grade, 5.7%(47) in the 4th grade, 3.9%(32) in the 5th grade, 1.3%(11) in the 6th grade, 0.7%(6) in the 8th and 7th grade respectively.

3.3. Actual States of Nursing Grades by the Scale of Hospitals (the Number of Beds)

Table 3 shows nursing grades by the scale of hospitals (the number of beds).

In the nursing grade of ordinary hospitals (upper general hospitals, general hospitals and hospitals) there were some significant differences found by the scale of hospitals (the number of beds). In hospitals with less than 300 beds, the 6th grade was highest, 50.0%~66.0%,

Table 2. Nursing Grades of Each Kind of a Medical Institution

(Unit: the number of hospitals(%))

Grade	Upper General Hospital	General Hospital	Hospital	Oriental Medicine Hospital	Geriatric Hospital	Chi-square (p)
1st	3(6.8)	7(2.7)	8(3.0)	0(0.0)	330(40.0)	1065.557 (.000)
2nd	9(20.5)	31(12.0)	29(10.9)	0(0.0)	291(35.3)	
3rd	31(70.5)	64(24.7)	42(15.8)	2(3.4)	103(12.5)	
4th	1 (2.3)	35(13.5)	39(14.7)	4(6.8)	47(5.7)	
5th	0(0.0)	27(10.4)	31(11.7)	8(13.6)	32(3.9)	
6th	0(0.0)	45(17.4)	101(38.1)	8(13.6)	11(1.3)	
7th	0(0.0)	50(19.3)	15(5.7)	37(62.7)	5(0.6)	
8th	0(0.0)	0(0.0)	0(0.0)	0(0.0)	6(0.7)	
subtotal	44(100)	259(100)	265(100)	59(100)	825(100)	

*April 29, 2008 Income Tax Act Enforcement Rules Article 7 (4):

and in hospitals with more than 300 beds, the 3rd grade was highest, 43.9%~50.0%.

In oriental medicine hospitals, the 7th grade was highest, 50.0%~66.0%, regardless of the

number of beds, and in geriatric hospitals, the 1st grade was highest, 37.7%~57.1%, regardless of the number of beds.

Table 3. Nursing Grades by the Scale of Each Kind of a Hospital (the Number of Beds)
(Unit: the number of hospitals(%))

Section	No. of Beds	1st	2nd	3rd	4th	5th	6th	7th	8th	Total	Chi-square (p)
Ordinary Hospitals	below 99	7 (4.3)	22 (13.6)	27 (16.7)	27 (16.7)	18 (11.1)	57 (35.2)	4 (2.5)		162 (28.5)	183.843 (.000)
	100-199	2 (1.7)	7 (6.0)	19 (16.2)	18 (15.4)	13 (11.1)	37 (31.6)	21 (17.9)		117 (20.6)	
	200-299	1 (0.8)	5 (3.8)	16 (12.2)	19 (14.5)	17 (13.0)	44 (33.6)	29 (22.1)		131 (23.1)	
	300-499	2 (3.0)	6 (9.1)	29 (43.9)	7 (10.6)	7 (10.6)	7 (10.6)	8 (12.1)		66 (11.6)	
	over 500	6 (6.5)	29 (31.5)	46 (50.0)	4 (4.3)	3 (3.3)	1 (1.1)	3 (3.3)		92 (16.2)	
Oriental Medicine Hospitals	below 99			1 (2.0)	4 (8.0)	6 (12.0)	6 (12.0)	33 (66.0)		50 (84.7)	10.521 (.230)
	100-199			1 (12.5)	0 (0.0)	1 (12.5)	2 (25.0)	4 (50.0)		8 (13.6)	
	200-299			0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)		1 (1.7)	
Geriatric Hospitals	below 99	132 (40.4)	105 (32.1)	39 (11.9)	20 (6.1)	18 (5.5)	5 (1.5)	4 (1.2)	4 (1.2)	327 (39.6)	122.832 (.741)
	100-199	143 (37.7)	143 (37.7)	53 (14.0)	23 (6.1)	10 (2.6)	4 (1.1)	1 (0.3)	2 (0.5)	379 (45.9)	
	200-299	42 (43.3)	36 (37.1)	11 (11.3)	3 (3.1)	4 (4.1)	1 (1.0)	0 (0.0)	0 (0.0)	97 (11.8)	
	300-499	12 (57.1)	7 (33.3)	0 (0.0)	1 (4.8)	0 (0.0)	1 (4.8)	0 (0.0)	0 (0.0)	21 (2.5)	
	500 이상	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	

Note) Ordinary Hospitals: Upper general hospitals, General hospitals, Hospitals

3.4. Actual States of Nursing Grades by the Location of Hospitals

Table 4 shows nursing grades by the location of each kind of a medical institution.

In the nursing grade of ordinary hospitals (upper general hospitals, general hospitals and hospitals) and geriatric hospitals, there were some significant differences found by the

location of hospitals. When they were located in Seoul, the rate of the 3rd(28.1%) and 2nd grades (24.6%) was 52.7%, and when they were located in metropolitan cities, the rate of the 3rd grade was 30.3%, and the 6th grade was 28.0%, and when they were located in provinces, the 6th grade was 26.5% and the 7th grade was 20.1%.

When geriatric hospitals were located in

Seoul, the 1st grade was 54.0% and the 2nd grade was 25.0%, and when they were located in metropolitan cities, the 1st grade was 43.4% and the 2nd grade was 41.9%, and when they were located in provinces, the 1st grade was

36.1%, and the 7th grade was 33.2%.

When oriental medicine hospitals were located in Seoul, the 7th grade was highest, 50.0%~68.0%, regardless of their locations.

Table 4. Nursing Grades by the Location of Each Kind of a Medical Institution

(Unit: the number of hospitals(%))

Section	Location	1st	2nd	3rd	4th	5th	6th	7th	8th	Total	Chi-square (p)
Ordinary Hospitals	Seoul	6 (5.3)	28 (24.6)	32 (28.1)	13 (11.4)	8 (7.0)	23 (20.2)	4 (3.5)		114 (20.1)	68.901 (.000)
	Metropolitan	6 (3.4)	19 (10.9)	53 (30.3)	21 (12.0)	22 (12.6)	49 (28.0)	5 (2.9)		175 (30.8)	
	Province	6 (2.2)	22 (7.9)	53 (18.6)	21 (14.7)	28 (10.0)	74 (26.5)	56 (20.1)		279 (49.1)	
Oriental Medicine Hospitals	Seoul			1 (6.3)	1 (6.3)	5 (31.3)	1 (6.3)	8 (50.0)		16 (27.1)	11.068 (.198)
	Metropolitan			1 (5.6)	0 (0.0)	1 (5.6)	4 (22.2)	12 (66.7)		18 (30.5)	
	Province			0 (0.0)	3 (12.0)	2 (8.0)	3 (12.0)	17 (68.0)		25 (42.4)	
Geriatric Hospitals	Seoul	39 (54.2)	18 (25.0)	5 (6.9)	4 (5.6)	4 (5.6)	0 (0.0)	1 (1.4)	1 (1.4)	72 (8.7)	36.640 (.001)
	Metropolitan	115 (43.4)	111 (41.9)	20 (7.5)	9 (3.4)	5 (1.9)	2 (0.8)	2 (0.8)	1 (0.4)	265 (32.1)	
	Province	176 (36.1)	162 (33.2)	78 (16.0)	34 (7.0)	23 (4.7)	9 (1.8)	2 (0.4)	4 (0.8)	488 (59.2)	

Note) Ordinary Hospitals: Upper general hospitals, General hospitals, Hospitals

3.5. Actual States of Nursing Grades by Hospital Foundation Type

Table 5 shows nursing grades by the foundation type of each kind of a medical institution.

In the nursing grade of ordinary hospitals (upper general hospitals, general hospitals and hospitals) and geriatric hospitals, there were some significant differences found by the foundation type of hospitals. All the nursing grades were evenly distributed in ordinary hospitals (upper general hospitals, general hospitals and hospitals), but in corporate

hospitals, the 3rd grade was highest, 29.1%, and in personal hospitals, the 6th grade was highest, 30.8%, and in national and public hospitals, the 6th grade was highest, 35.0%.

In corporate geriatric hospitals, the 2nd grade was 37.9% and the 1st grade was 35.8%, and in personal geriatric hospitals, the 1st grade was 44.2% and the 2nd grade was 33.65%, and in national and public hospitals, the 1st grade was 32.0% and the 2nd grade was 24.0%.

In oriental medicine hospitals, the 7th grade was highest, over 55.9%, regardless of their foundation types.

Table 5. Nursing Grades by the Scale of Each Kind of a Medical Institution (the Number of Beds)
(Unit: the number of hospitals(%))

Section	Foundati on Type	1st	2nd	3rd	4th	5th	6th	7th	8th	Total	Chi-square (p)
Ordinary Hospitals	Corp.	8 (3.0)	39 (14.7)	77 (29.1)	31 (11.7)	24 (9.1)	51 (19.2)	35 (13.2)		265 (46.7)	29.290 (.004)
	Personal	10 (3.8)	28 (10.6)	56 (21.3)	37 (14.1)	25 (9.5)	81 (30.8)	26 (9.9)		263 (46.3)	
	National	0 (0.0)	2 (5.0)	4 (10.0)	7 (17.5)	9 (22.5)	14 (35.0)	4 (10.0)		40 (7.0)	
Oriental Medicine Hospitals	Corp.			1 (2.9)	3 (8.8)	6 (17.6)	5 (14.7)	19 (55.9)		34 (57.6)	2.569 (.958)
	Personal			1 (4.2)	1 (4.2)	2 (8.3)	3 (12.5)	17 (70.8)		24 (40.7)	
	National			0 (0.0)	0 (0.0)	0 (0.0)	0 (90.0)	1 (100)		1 (1.7)	
Geriatric Hospitals	Corp.	133 (35.8)	141 (37.9)	56 (15.1)	23 (6.2)	11 (3.0)	5 (1.3)	2 (0.5)	1 (0.3)	372 (45.1)	37.097 (.001)
	Personal	189 (44.2)	144 (33.6)	43 (10.0)	20 (4.7)	20 (4.7)	6 (1.4)	3 (0.7)	3 (0.7)	428 (51.9)	
	National	8 (32.0)	6 (24.0)	4 (16.0)	4 (16.0)	1 (4.0)	0 (0.0)	0 (0.0)	2 (8.0)	25 (3.0)	

Note) Ordinary Hospitals: Upper general hospitals, General hospitals, Hospitals

4. Discussion

To devise a plan for the effectiveness^{13,14,15)} of applying differentiated nursing fees (Nurse Staffing Grade)^{10,12,16)} depending on the number of nursing staff, which is enforced to improve the quality of nursing services for patients and resolve nurses' minimum employment problem, this study investigated the nursing grades of 1,452 medical institutions over the level of hospitals, listed on Health Insurance Review & Assessment Service as of March 2011, except dental clinics^{16,17)}.

Rothberg et al.,⁹⁾ said that in consideration of patients' safety and hospitalization periods in a general ward, it is most cost-effective when the ratio of nurses to patients is 4:1. Besides, Yoon et al., conducted a research on the degree of nurses performing nursing activities by the nursing grades in Korea, and

they said that nurses' nursing performance was highest in the 1st nursing grade, but their nursing performance in the 3rd and 5th grade was lower than the 6th grade to the contrary. It seems to be because the difference of work they actually experience was not clear enough. It was found that 1/3 of the upper general hospitals, general hospitals and hospitals belonged to the 6th grade when they had less than 300 beds. It was also found that about a half of them belonged to the 3rd grade when they had more than 300 beds, which indicates that the more beds a hospital had, the higher the ratio of nurses to patients became.

In spite of the addition rate adjustment and grade subdivision, such as the reduction of inpatient-charge and the addition of the 7th grade in 2008, for the resolution of nurses' minimum employment problem, it is clear that nursing huan resources are being shifted from ordinary

hospitals (upper general hospitals, general hospitals and hospitals) to large-scaled hospitals in the capital area. As a matter of course, it is also true that nurses are looking for job at large-scaled hospitals. This phenomenon is related to their working conditions and environments, but a psychological factor of nurses' preferring large-scaled hospitals is also accelerating this phenomenon indeed. For the effectiveness of applying differentiated nursing fees depending on the number of nurses, which is enforced to improve the quality of nursing services for inpatients and resolve nurses' minimum employment problem, it is needed to consider adjusting the differentiated nursing fee system in order to establish environments good enough to attract nurses to middle and small-scaled hospitals.

In other words, since the 1st and 2nd grade-rates are high in geriatric hospitals, regardless of regions and the size of hospitals, it seems necessary to refer to geriatric hospitals when applying the nursing grade system to medical institutions^[18]. Moreover, in similar cases in Japan, the Labor & Welfare Department introduced a nursing system in 1994 and adjusted it by reflecting patients' severity in 2006¹⁾. The Korean government has attempted to adjust Nurse Staffing Grade so far, but upper general hospitals, general hospitals and hospitals show different distributions of grades although they are all ordinary hospitals, and there are some differences in the grade distribution even by location and the size of hospitals. Therefore, it is necessary even to consider reestablishing the present system fit for reality by reflecting the disease category and severity of patients.

5. Conclusion

This study analyzed the states of Nurse Staffing Grade of 1,452 medical institutions all over the country in 2011, and the ratio of nurses to patients in Korean medical institutions are as below.

1. The ratio of nurses to patients was less than 3.5:1 in all the upper general hospitals, out of which 70.5% belong to the 3rd grade(2.5-3.0:1).
2. 52.9% of the general hospitals showed less than 4:1, out of which 24.7% (the majority) belonged to the 3rd grade (3.0-3.5:1).
3. 44.4% of the hospitals showed less than 4:1, out of which 38.1%(the majority) belonged to the 6 th grade(4.5-6.0:1).
4. The ratio of nurses to patients was 4:1 in 69.4% of the ordinary hospitals (upper general hospitals, general hospitals and hospitals) in Seoul and 56.6% in metropolitan cities.
5. When ordinary hospitals were located in provinces, 43.4% showed less than 4:1, and the larger a city was, the higher the ratio of nurses to patients was, that is, a higher nursing grade. For the effectiveness of applying differentiated nursing fees by the number of nurses, it seems necessary to consider adjusting the present differentiated inpatient-charge system for the better so that small and medium-sized hospitals may induce more nurses.

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