Pay 4 Performance in Korean Hospital Nursing

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Healthcare Quality

- *Quality assessment* : ***Avedis Donabedian, 1980***

"**In my discussion of the context of quality assessment I pointed out that as attention shifts from the interaction of one patient-practitioner pair to the provision of care by groups of practitioners to entire populations, a number of attributes of care become much more prominent determinants of the quality of care**".

- *Approach*: **Structure, Process, and Outcome**

Pay 4 Performance & Quality Health care

- The rationale behind Paying for Performance(P4P) in health care is that if compensation is directly linked to quality of care, providers will shift more effort towards quality improvement.
- Adopted in health care as a means to alter financial incentives of providers.
- Well aligned providers' main financial incentives with meeting quality targets → successful

Contents

- Introduction & purpose of Study
- Health system in Korea
- Methods & Results
- Conclusions
- Policy implications

Introduction

- The number of active nurses per 100 acute beds was about 4.8 in Korean(1990s), which was quite low compared with Western standards
- Compelling evidences that nurse staffing directly influences quality of care
- Rewarding hospitals according to their staffing levels may be an effective way to increase hospital investment in nursing resources
- However, raising staffing levels requires substantial capital investment. The bonuses linked to P4P metrics are often too small to cover the labor costs required.

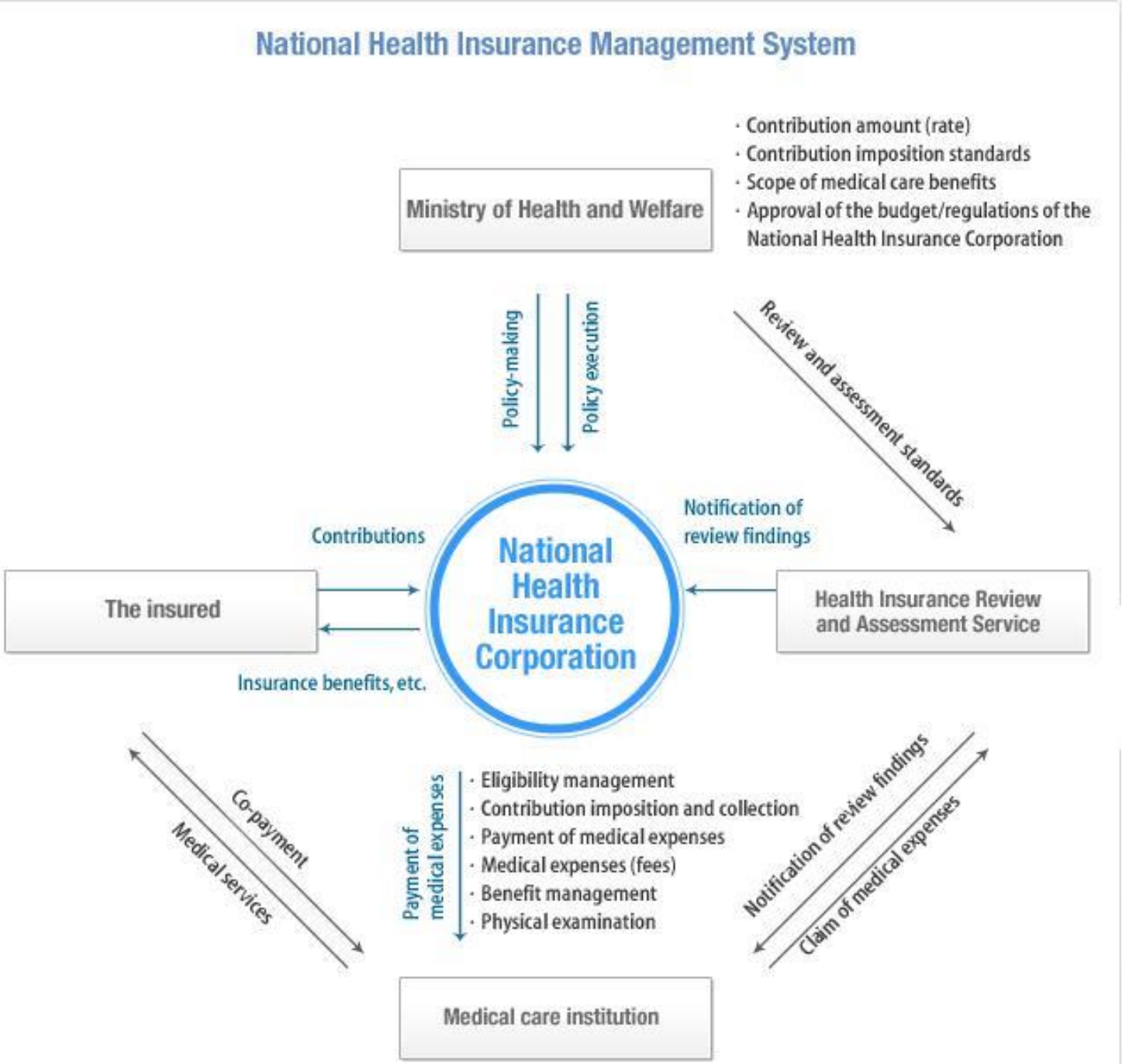
- In 1999, the social insurance in South Korea(National Health Insurance Services, NHIS) reformed the hospital payment method to provide acute hospitals with incentives based on level of nurse staffing
- In 2007, added a disincentive, whereby hospitals failing to reach a threshold level had to pay penalties
- A decade of experience in South Korea provides a testable case to examine the effectiveness of financial incentives to increase nursing resources.

Brief overview of the health care system in South Korea

- Korea's social health insurance since 1977
  - Expanded; limited population → businesses with fewer employs & self employed population
  - Subsidized by government; 35-50% → 20%
  - Subsidies as a share of total general government expenditures; 0.7% → 4.1%
- Household premiums subsidized by employers & government
- Consumer out-of-pocket payment (20-55%) not covered by social insurance

Brief overview of the health care system in South Korea

- Medical providers compensated on a fee-for-services (FFS) basis
- Committee for Financial Management
  - Sets the medical fee schedules and defines the scope of national health insurance coverage and benefits
  - Kept fee schedules very low, often not covering actual costs for some services, and excluding coverage for many expensive services
- An independent agency, the Health Insurance Review and Assessment Service (HIRA)
  - authoritative to make strategic purchasing
  - reviewing provider payment scheme and fee schedules, auditing insurance claims, and assessing quality of health care providers
  - established pay-for-performance (P4P) and public reporting programs



Source: Ministry of Health and Welfare

Building blocks of the P4P

- A monitoring system, price setting, and an adjustment system

1) *Monitoring*

- collects data on each hospital's nurse staffing on a quarterly basis
- following the assessment, pays for that quarterly nursing fee (the Nursing Administration Fee)
- Separates the revenue category of nursing care from the daily room-and-board charge
- the nursing fee - based on a per-bed ratio, not accounting for nursing intensity provided for each patient

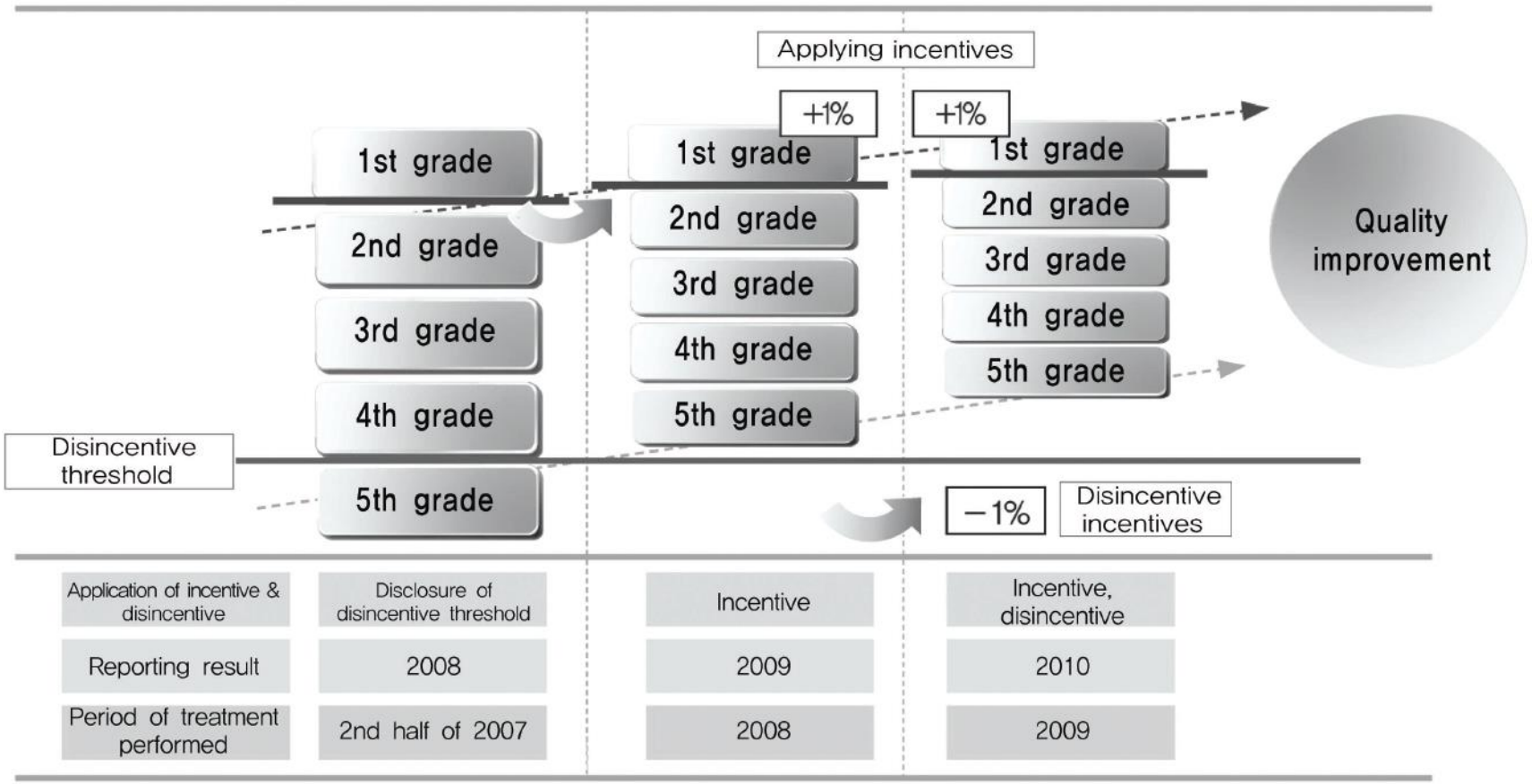
Building blocks of the Korean Nursing P4P

2) *Price setting*

- Sets up six grades:
  - hospitals are paid **100%** of the base nursing fee (per diem per patient rate) by NHIS when complying with the minimum requirement (Grade 6)
    - The value of base rate is annually determined through the National Health Insurance Policy Review Committee chaired by the vice minister of health and welfare
  - As it advances into the upper grades, the capital benefits that a hospital would gain increase by 40% of the base rate
- At the highest level, a hospital is paid **300%** of the fee (Grade 1)

3) *Actual payment adjusting factors*

- By grouping hospitals according to cost related to hiring nurses


Applying incentives
+1%
+1%
1st grade
2nd grade
3rd grade
4th grade
5th grade
1st grade
2nd grade
3rd grade
4th grade
5th grade
1st grade
2nd grade
3rd grade
4th grade
5th grade
Quality improvement
Disincentive threshold
−1%
Disincentive incentives
Application of incentive & disincentive
Disclosure of disincentive threshold
Incentive
Incentive, disincentive
Reporting result
2008
2009
2010
Period of treatment performed
2nd half of 2007
2008
2009

Purpose of study

- To examine whether the payment incentive leads hospitals to increase nurse staffing
- To examine whether the response to the nursing incentive has been consistent across hospitals with various financial statuses
- To examine whether the resulting staffing changes improved nurses' working conditions

Data Sources

- Annual financial reports (1996-2005) on 756 - 1,525 hospitals
  - including short-term acute hospitals, excluding psychiatric, specialty, and long-term care hospitals
  - inpatient units only
- 2010 nationwide survey of hospital RNs performed by the Korean Health and Medical Workers Union to learn whether work conditions were improved following payment reform
  - 2,387 RNs from 29 nationwide hospitals
  - including medical-surgical units and obstetrics and gynecological units, excluding the ICUs, OR, and EDs

Measures

- *Nursing payment reform*
  - pre-policy years (1996 and 1999)
  - intervention year (1999)
  - post-policy years (2002, 2005, 2008)
    - 'post intervention 1'
    - 'post intervention 2'
    - 'post intervention 3'
- Nurse staffing level
  - grade 1 – grade 6 (currently)
  - whether the level had improved since 2005 (by 1 grade, by 2 grade, no improvement).

- *Nurses' work conditions*
  - job satisfaction, burnout, and intention to leave
  - job satisfaction: 4-point Likert-type scale (1 = very dissatisfied, 2 = dissatisfied, 3 = satisfied, and 4 = very satisfied)
  - degree of burnout: the Maslach Burnout Inventory–Human Services Survey, (Maslach, Jackson & Leiter 1986)
  - intention to leave current employer was measured by a single item asking, "Are you intending to leave your current employer(s) within a year?"
- *Characteristics of nurses*
  - age, marital status, years of nurse experience, position (charge or staff nurse), and education
  - current employer: number of beds, location
- *Hospital characteristics*
  - Hospital type, size, location, ownership, teaching status, etc
  - Hospital type was categorized as
    - *General hospital* : 100 licensed beds and met particular criteria
    - *Hospital*: 30 to 100 licensed bed

Statistical analysis

- First, analyzed the trend of nursing staffing by comparing data from before the policy with that from after the policy
- Next, estimated what factors affected the changes in nurse staffing by using multivariate regressions
  - Controlled for the factors pertinent hospitals' staffing decisions (location, hospital type, size, case mix)
- Last, multilevel logistic regression analysis
  - to examine whether hospital nurses had perceived improvements in their working conditions after the nursing payment reform
  - Applied multilevel specifications
    - to control for the hospital effect since respondents coming from the same hospitals shared the same work conditions as well as other organizational characteristics

Table 1. Descriptive statistics of Korea's acute hospitals, 1996-2008

		1996		1999		2002		2005		2008	
		n	%	n	%	n	%	n	%	n	%
Hospital Type	General Hospital	275	36.38	275	32.66	275	28.86	286	22.27	303	19.87
	Hospital	481	63.62	567	67.34	678	71.14	998	77.73	1,222	80.13
Ownership*	Public	122	16.14	100	11.88	103	10.81	139	10.83	119	7.8
	Private	619	81.88	742	88.12	850	89.19	1145	89.17	1,406	92.2
Location	Capital city and neighbor	280	37.04	294	34.92	322	33.79	399	31.07	460	30.16
	Metropolitan	176	23.28	232	27.55	274	28.75	379	29.52	438	28.72
	Rural	300	39.68	316	37.53	357	37.46	506	39.41	627	41.11
Training Hospitals	Yes	246	32.54	226	26.84	210	22.04	217	16.9	199	13.05
	no	510	67.46	616	73.16	743	77.96	1067	83.1	1,326	86.95
Total		756	100	842	100	953	100	1284	100	1,525	100

* 1996: missing 154

Figure 1. Average number of nursing workforce in Korean hospitals,1996 -2008

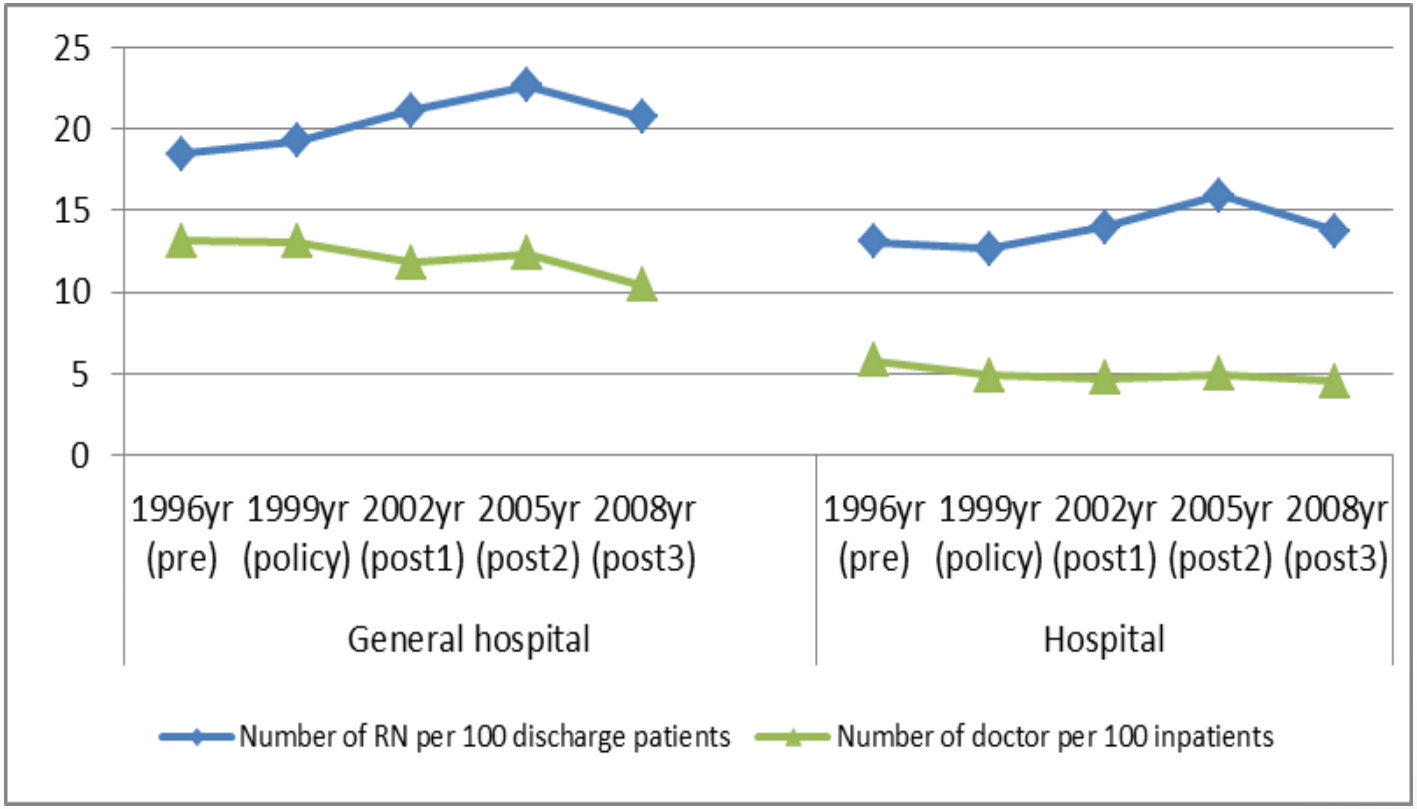


Table 2. Estimates of the effect of P4P in the nursing payment on nurse staffing in Korean hospitals

Dependent variable: Number of RNs(log)			
Variables	Estimate	SE	*p*-Value
General Hospital (referent to Hospital)	**0.442**	0.06	<.0001
Number of beds	**0.629**	0.015	<.0001
Number of patient discharges	**0.423**	0.009	<.0001
Public ownership (referent to private)	**0.257**	0.03	<.0001
Location (referent to rural area)			
Capital city & neighbor	**0.244**	0.022	<.0001
Metropolitan	**0.165**	0.022	<.0001
Teaching status (referent to non-teaching hospitals)	**0.212**	0.032	<.0001
Policy period (referent to 1996)			
Policy intervention (1999)	**0.236**	0.06	<.0001
Post intervention 1 (2002)	**0.386**	0.06	<.0001
Post intervention 2 (2005)	**0.472**	0.06	<.0001
Post intervention 3 (2008)	**0.436**	0.059	<.0001
Hospital type & Policy interactions			
Hospital*policy	0.034	0.072	0.64
Hospital*post intervention 1	-0.045	0.071	0.524
Hospital*post intervention 2	-0.081	0.07	0.247
Hospital*post intervention 3	**-0.166**	**0.069**	**0.016**
N	**4,902**		
Adj R-Sq	0.792		

Table 3. Descriptive statistics on hospital nurse survey in 2010

		n	%
Number of beds	Less than 500	407	17.05
	500-799	791	33.14
	More than 800	1189	49.81
Location	Capital area	1123	47.05
	Metropolitan	862	36.11
	Rural	402	16.84
Level of Nurse Staffing	Grade 1	570	24.28
	Grade 2	1096	46.68
	Grade 3	485	20.66
	Grade 4	99	4.22
	Grade 5	98	4.17
	Grade 6	0	0
Changes in staffing grade, past 5 years	No change	568	24.84
	Advanced by 1 grade	1094	47.84
	Advanced by 2 + grade	625	27.33
Demographics of RNs			
Age	<25	621	26.02
	25-29	989	41.43
	>=30	777	32.55
Marital status	married	662	27.93
	no married	1708	72.07
Experiences (years)	<5	1302	54.55
	5-9	617	25.85
	>=10	468	19.61
Positions	staff nurse	2,164	91.62
	charge nurse	158	6.69
	head nurse	40	1.69
Education	3 year nursing program	1,234	52.2
	College graduate	996	42.13
	Master's or higher	134	5.67
Total		2,387	100

Table 4. Changes in staffing levels and nurse's work conditions in Korean hospitals

	Job satisfaction (%)				High burn out(%)				Intention to leave (%)			
	unsatisfied	satisfied	N	chi sq (p)	no	yes	N	chi sq (p)	no	yes	N	chi sq (p)
No change	70.72	29.28	567	5.463	25.09	74.91	562	4.53	63.09	36.91	550	6.993
Advanced by 1 grade	68.41	31.59	1089	(0.065)	26.46	73.54	1077	(0.104)	68.97	31.03	1070	(0.032)
Advanced by 2+ grades	64.52	35.48	620		30.29	69.71	614		69.36	30.64	607	
N	67.93	32.07	2276		27.16	72.84	2253		67.62	32.38	2227	

Table 5. Estimates of the effect of the nursing payment reform on nurse's work conditions in Korean hospitals

Dependent variables	Job Satisfaction			High burn out			Intention to leave		
Variables	OR	95% CI		OR	95% CI		OR	95% CI	
Changes in nurse staffing grade, past 5 years (referent to no change)									
Advanced by 1 grade	0.994	(0.574	1.723)	1.217	(0.627	2.363)	1.153	(0.717	1.854)
Advanced by 2+ grades	0.887	(0.429	1.835)	1.314	(0.549	3.141)	1.579	(0.834	2.991)

Note: All regression models include nurse demographics (age, marital status, years of nurse experience, position, education) and hospital characteristics (number of beds, location, levels of nurse staffing).

Conclusions

- Examining a decade of experience in P4P in Korean hospital nurse staffing, this study shows that the approach is somewhat effective for "*the general hospitals*" with adequate resources to invest in nurse staffing, but less so with "the *hospitals*" that lack such resources.
- Our findings inform policymakers in other countries that **a policy to incentivize nurse staffing using P4P can be more effective by considering those hospitals in poor financial shape.**

Policy implications

- Linking institution-level nurse staffing to payment is effective in improving nurse staffing in the hospital sector.
- This approach could be added to already existed staffing regulations such as minimum nurse-to-patient ratios or patient classification systems.
- To be more effective, careful considerations for hospitals in poor financial shape are required when designing and implementing this approach.
- Surprisingly, nurse outcomes including job dissatisfaction, burnout, & intention to leave were not significantly improved, while overall staffing increased.
- Investment to improve nurse work conditions is required to increase staffing levels.