#### Study on the Medical Quality Improvement Status and Influencing Factors of Staff Members in the Municipal Hospitals

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#### Abstract

The study was to identify the quality improvement status and influencing factors of municipal hospitals in seoul. The participants were 338 staff members who is working in municipal hospitals. Data analysis was done with PASW statistics 18.0 program using ANOVA, t-test, Pearson's correlation. The mean for Promoting of quality improvement status 3.35, Influence factors were 3.32. Quality improvement status showed positive with position (F=3.01, p=.030), Career (F=2.864, p=.037). Influencing factors of QI activities (t=4.932, p<0.001) and Structural factors (t=-2.268 p=.024) of quality improvement. The findings of this study indicate a need to Q I educational program, attention Q I of president and sharing QI educational program. To support technical program and education of staff members in the municipal hospitals.

Keywords: Municipal hospital, Quality improvement

\* This Study has been conducted with funding from the Seoul Medical Center

#### **1. Introduction**

#### 1.1. Need for the study

The medical work environment changes and an accelerating informational technology have affected all medical fields. Hospitals have started to provide not only excellent and professional quality medical care, but also outstanding patient service [1]. Also, as competition among medical institutions has intensified, many medical institutions have strived to enhance their competitive positions by setting standards for medical service, satisfying the customer needs, and additional efforts toward increasing efficiency of the internal hospital management. With one of these efforts being quality improvement, each hospital is installing quality control departments, with the goal of implementing quality improvement.

According to Moon, Lee & Kim's [2] research, medical quality improvement was initially focused on the patient's convenience rather than medical areas, and now it is understood that quality improvement efforts have also to concentrate on medical examination and treatment. As the domestic interest in quality improvement has increased, medical institutions have started to carry out clinical audits. However, full assessments regarding primary care, mental health, patient safety, *etc.* have not yet been achieved, and it is not easy to estimate health care quality for the entire nation [3]. In particular, for the case of municipal hospitals, it is difficult to secure an outstanding medical team due to the hospitals' smaller scales, smaller budgets, older facilities, and their medical staffs trying to avoid additional responsibilities. As such, the municipal hospitals are recognized as only the hospitals for the poor, elderly and Medicaid patients,

with significant differences seen in their competitiveness compared with the private hospitals. Given this reality, particularly for and including municipal hospitals, changes in managerial structure of hospitals and patient service must be made with the goal of achieving and maintaining quality patient care. However, generous annual subsidies to municipal hospitals in order to improve on minimum facilities has not shown managerial improvements, and has given the impression that municipal hospitals will always provide sub-standard medical quality for a decreasing the number of patients [4].

To solve these problems and to improve the service quality, management of municipal hospitals does understand the need for improvement and actually have attempted to improve quality, but these activities have failed to produce effective and successful results. Various factors may need to change; these include the organization's culture, the leadership's management style, the focus on medical quality improvement, and participation of medical teams, and frequency of training for the staff. With complicated medical procedures, improving technical factors such as data analysis and team operation are crucial to the success of the procedures [5], and therefore, it is necessary to understand the influence of factors affecting quality and set up a strategy appropriate for municipal hospitals.

The Welfare Support Group of Public Health for Korea issued a report that the limited size and infrastructure for the municipal hospitals results in inefficient utility of resources and insufficient medical quality improvement. The report cited the need to improve in these areas. To raise the competiveness and quality of service of municipal hospitals to the level of private hospitals, the importance of medical quality improvement must first be recognized. By changing the organization culture within the hospital, team operations in which diverse members participate should establish the activities and the results of medical quality improvement activities must be constantly and consistently considered in changes in perceptions of CEOs and managerial strategy.

Municipal hospitals should place medical quality improvement as the principal task in managing their institutions; however, aside from a few hospitals, these hospitals, in general, have provided only minimum activity for assessing areas of need and have not been able to put together systematic activities for medical quality improvement, and the reality is that it is rather difficult to expect successful results [6].

This research, therefore, aims to identify medical quality improvement activities and their influencing factors in a municipal hospital in Seoul and to provide the fundamental data requisite for planning efficient medical quality improvement activities and policy plans for municipal hospitals.

#### 1.2. Aim

The specific aims for this research are as follows:

1) Understand the organization's general features

2) Understand the organization's medical quality improvement activities and influencing factors

3) Understand the difference in medical quality improvement activities and influencing factors depending on the organization's general feature.

4) Understand the correlation between the organization's medical quality improvement activities and the influencing factors.

#### 2. Methods

#### 2.1. Planning

This research is a descriptive research conducted to identify the correlation between medical quality improvement activities and the influencing factors in a member municipal hospital

#### 2.2. The Subjects of Study

This research studied members of six different municipal hospitals in Seoul. To determine the ideal sample size, the G\* power 3.1 program was used. From this analysis, setting a significance level of .05, power of 95%, and effect size of 0.25, a sample size of at least 280 was required to perform a correlation of two factors (medical quality improvement activities and the influencing factors). Considering a possible 30% failure in collecting data, we arrived at a goal of 360 subjects.

#### 2.3. Methods

1) Quality improvement activity

To measure quality improvement activity, two professors from a nursing school and representatives for quality improvement reconstructed and used the factors investigated by Choi *et al.* [17].

To identify the hospital's quality improvement activities, a survey of 18 questions was prepared: 6 questions concerned the organization's culture, 7 questions were for the technologies used, and 5 had to do with the structural field. The evaluation was based on Likert scale of 4, with 4 meaning "very important" and 1 meaning "not important at all." The higher the survey score, higher the quality of the improvement activities detected. The research showed a Cronbach's alpha of 0.90.

#### 2.4. Procedure

This research was conducted under the approval of S Medical Center's Bioethics Committee (Approval No. IRB13-065).

Data was collected from surveys distributed to 360 members in 6 municipal hospitals in Seoul, Korea, each with less than 500 sickbeds over the period from September 1, 2013 to September 30, 2013. A total of 343 surveys were collected, and aside from 5 inappropriately filled surveys, the remaining 338 surveys were analyzed. The survey method was of a self-recording type, in which the researcher directly explained the purpose of the research and collected the data from the ones who agreed to participate. The participants were informed that they were free to leave the study at any time and not to complete the survey if they did not wish it.

#### 2.5. Data Analysis

The collected data were statistically processed through the PASW 18.0 program with the details as follows:

1) Measures of frequency, percentage, mean, and standard deviation were computed for the following variables: the standard of the general feature, medical quality improvement activities, and the influencing factors.

2) The differences between variables following the subjects' general feature were analyzed using the t-test, ANOVA.

3) Correlation between variables was analyzed by computing Pearson's product-moment correlation coefficient.

#### 3. Results

#### 3.1. General Features of the Subjects

Characteristics	Categories	N(338)	%
Gender	Male	52	15.4
	Female	286	84.6
Age(Year)	<25	14	4.1
	26-35	161	47.6
	36-45	90	26.6
	46-55	54	16.0
	≤56	19	5.6
Job	Nurse	197	58.3
	Others	141	41.7
Clinical career	<3	219	64.8
(Year)	4-6	33	9.8
	7-9	47	13.9
	≤10	39	11.5
Position	Team manager	45	13.3
	Manager	17	5.0
	Chief	65	19.2
	Staff	211	62.4
Number of bed	<199	31	9.2
in hospital	200-299	163	48.2
	300-499	108	32.0
	≤600	36	10.7
Educational	Yes	213	63
	No	125	37

#### **Table 1. General Characteristics of Subjects**

There were 286(84.6%) female and 52(15.4%) male participants in the survey, presenting a high female to male ratio. For the subjects, 14(4.1%) were of age 25 or younger and 161 (47.6\%) were of age between 26 and 35. For the occupation of the subjects, 197(58.3%) were nurses, and 141(41.7%) were other. For the participants, 33(9.8%) possessed a work experience of seven to nine years and 219(64.8%) had experience of four to six years. Among the nurses, most were employees and with regular administrative postilions. For the total pool ,there were 211(62.4%) employees. Participants from hospitals with the number of beds between 200-300 were the largest group at 163(48.2%), followed by ones from centers with less than 200 beds at 31(9.2%). The data displayed that 213 subjects that received quality improvement\_(QI), and 125 who did not. (Table1)

### **3.2.** The Participants' Medical Quality Improvement Activities and the Extent of Influencing Factors

In the 4 point Likert scale, the degree of medical improvement quality showed 2.78 points. One of the lower areas, the organization's culture area had 2.75 points, and structural area was 2.63 points, displaying the lowest grade. Influencing factors for medical improvement quality activities had an average of 3.35 points (Table2).

Section	
QI activities	Mean(SD)
Organizational	2.75 (0.38)
Technical	2.95 (0.38)
Structural	2.63 (0.48)
Total(Score)	2.78 (0.35)
Influencing factors	3.35 (0.38)

Table 2. Status of QI Activities and Influencing Factors

### **3.3.** Medical Quality Improvement Activities and Influencing Factors Depending on the General Characteristics of the Subjects.

For medical improvement activities and whether they depended on general characteristics of the hospital, organization's culture showed significant differences in the area of experience (F=2.864, p=.037) and the area of position (F=2.692, p=.046). On the other hand, gender, age, occupation, and the number of hospital beds did not show significant differences. In the technical area, significant differences were observed in the occupational category(F=11.044 p=.001) and level of experience (F=3.760 p=.011), and not so for gender, age, duty, and the number of hospital beds. In the structural area, a significant difference was found in the number of hospital beds(F=3.759 p=.011), and no significances were seen for gender, age, occupation, number of work years, and position. Differences in factors influencing medical improvement activities depending on general characteristics was significant in the occupational category(F=3.83, p=.030) and position(F=3.01, p=.030), and not statistically significant for gender, age, experience, and the number of hospital beds(Table 3).

	Influence factors		QI Activities					
Categories			Organiza	Organizational		Technical		Structural
	M±SD	t or F	M±SD	t or F	M±SD	t or F	M±SD	t or F
Gender								
Male	3,30±0,39	,059	2,83±0,40	,063	2,91±0,46	4,33'	2,69±0,47	,035
Female	3,36±0,38		2,74±0,38		2,95±0,36		2,62±0,48	
Age(Year)								
<25	3,27±0,32	,396	2,72±0,28	1,578	2,95±0,25	1,004	2,75±0,37	,566
26-35	3,33±0,42		2,72±0,38		2,96±0,39		2,64±0,48	
36-45	3,36±0,34		2,77±0,38		2,92±0,41		2,60±0,46	
46-55	3,38±0,37		2,76±0,40		2,91±0,31		2,64±0,48	
<56	340±031		$2.95 \pm 0.33$		3 09±0 35		2,53±QI0,5	
	0,10-0,01		<b>D</b> , 000-0, 000		0,00-0,00		4	
JOD Nurse	342+036	033	2 70±0 36	308	2 95 + 0 30	11 044''	256±046	002
Others	3,42±0,00	,000	2,10±0,00	,000	2,00±0,00	11,044	2,00±0,40	,002
Clinical career	0,20±0,00		2,04±0,40		2,34±0,40		2,7240,40	
(Year)								
<3	3,35±0,36	,297	2,79±0,35	2,864	2,99±0,33	3,760'	2,65±0,46	1,040
4-6	3,39±0,45		2,77±0,36		2,87±0,41		2,61±0,51	
7-9	3,36±0,42		2,61±0,51		2,80±0,51		2,52±0,54	
≤10	3,31±0,41		2,73±0,38		2,96±0,33		2,67±0,46	
Position								
Team manager	3,28±0,46	3,01'	2,71±0,41	2,692'	2,91±0,36	,218	2,58±0,52	1,010
Manager	3,50±0,36		2,71±0,43		2,99±0,52		2,81±0,53	
Chief	3,26±0,41		2,87±0,39		2,94±0,43		2,64±0,40	
Staff	3,38±0,35		2,73±0,36		2,95±0,35		2,62±0,48	
Number of								
bed hospital								
<199	3,38±0,40	.474	2,70±0,35	,273	2,88±0,29	,623	2,72±0,38	3,759'
200-299	3,33±0,39		2,76±0,44		2,95±0,42		2,70±0,52	
300-499	3,35±0,37		2,75±0,31		2,94±0,35		2,52±0,44	
≤600	3,41±0,37		2,78±0,35		3,01±0,32		2,54±0,40	

## Table 3. QI Activity and Infuence Factors According to GeneralCharacteristics

### **3.4.** Correlation between Medical Quality Improvement Activities and the Influencing Factors

# Table 4. A Correlation Between Intension about QI Activity and InfluenceFactors

Saction		Influencing		
Section	Organizational	Technical	Structural	Factors
Technical	.587 **	1		
Structural	.642 **	.467 **	1	
Influencing factors	.075 **	.242 **	022	1

The correlation among the lower areas of medical quality improvement activities including, organization's culture area, technical area, structural area, and influencing factors showed statistically significant correlation in technical area(r=.242, p<.001) and organization's culture area(r=.075, p<.001), whereas structural area(r=.022, P=.690) did not display a statistically significant correlation(Table 4).

#### 4. Discussion

This research, in a survey format, examined the extent of medical quality improvement activities and the factors that may influence those for a number of municipal hospitals in Seoul, Korea. This work was conducted to provide fundamental data necessary for implementing and refining medical quality improvement programs and decision making for the municipal hospitals.

For having received medical quality improvement education, the highest correlation in the participants' general characteristics was for age as between 26 and 35 (47.6%) and 63.2%\_\_\_\_ of the subjects had received training. The Korea Health Organization recently introduced an evaluation system for various medical facilities and made it mandatory for medical faculty personnel to receive a one-year education in medical quality improvement [12]. In particular, seeing that many American hospitals are actively utilizing medical quality improvement activities to minimize managerial inefficiencies and increase the level of satisfaction from their clients, medical quality improvement education and activities must be actively conducted to increase hospital competitiveness [5].

In Gu [10] analysis of medical quality improvement activities for different occupational categories, 50.6% of nurses and 7.7% of doctors had received training in medical quality improvement activity education, and our research had a similar result. However, Kim [4] stated that without participation of medical doctors, quality improvement activities are not effective as there are not adequate improvement suggestions made and practiced. Many hospitals actively encourage doctors to help medical quality improvement programs succeed. In improving the medical quality of municipal hospitals, the doctors' active participation can measurably benefit medical quality improvement efforts and enhance patient service as well as improve the reputation of the municipal hospitals. In Jeon's [11] research on factors influencing medical quality improvement activity, 76.9% of the respondents indicated that they had medical quality improvement education, which was higher than this research. However, the low rate of survey response from the doctors limited the accuracy of gauging the percentage of doctors that received the training. In Kim's [4] research, the culture of the organizations for the participants reflected low doctor interest in medical quality improvement activity compared to other groups such as the nurses. The most important key to improving medical quality improvement activity is to extend medical quality improvement activities, and the doctors' role in providing medical treatment is a significant portion of this. Therefore, it is crucial that doctors participate in increasing quality of care and also encourage medical quality improvement.

Studies [7, 13] have indicated that the medical personnel, their education for quality control, and a well-trained coaching team are prerequisites for successfully carrying out effective medical quality improvement activity. According to JCAHO's research, sufficient education in medical quality improvement methodology and initially selecting a well-trained medical quality improvement team are the most important factors for success above anything else [9]. Comparative data from domestic and foreign sources indicates that in order for medical quality improvement activities to succeed, professional knowledge of employees in medical quality improvement is important. Therefore, from now on, each participating hospital needs to constantly carry out expanded and diverse education to all personnel to make medical quality improvement activity more effective. Park [14] mentioned that in a domestic report, policy alternatives were also required to

improve patient safety in order to count as medical quality improvement, and the municipal hospitals should prioritize patient safety above all as part of medical quality improvement.

For activities in improving the quality of medical service, the organization's culture significantly correlated with level of experience (F=2.864, p=.037) and position (F=2.692 p=.046), but not for gender, age, occupation or the number of hospital beds. Shortell *et al.* [18] highlighted that a customer-focused mindset was a major success factor in quality improvement. In particular, it was stated that a high participation rate for the medical staff and sponsorship of the administration were important for a customer-focused organization's culture, and it also involved proper delegation of responsibility and activities for quality medical service [15]. As Shortell *et al.* [18] study was from outside of Korea, and no similar domestic studies have been conducted, a direct comparison may be difficult, but it can be concluded that experience and position influence the success of the quality improvement activities as part of the organization's culture. This involves increased interest from the administrators and a proactive attitude on the part of the managers. In particular, participation of those with more experience influences the improvement in the quality of medical service.

The technical field of activities for improving quality displayed significance with the type of work (F=11.044 p=.001) and experience (F=3.760 p=.011), but no significance was seen with respect to gender, age, position, or the number of hospital beds where the participant worked. In the technical field, there was a significant difference when "plans are established according to problem analysis," "improvement activities are performed in accordance with quality improvement activity plans" according to the age group. As there are only few preceding studies are available, comparison is difficult, but active training programs must be held in hospitals on methods for improving quality of medical service for the technical field. In Choi *et al.* [17], training for analytical methods supporting activities for increased quality control, well-trained quality improvement team and procedure-centered quality improvement activities were recognized as success factors. Thus, training the employees on methods and the related knowledge should be prioritized for effective quality control improvements, and consistent support is required for the hospitals to regularly monitor and systematically operate the process [19].

The structural field of activities for improving the quality of medical service displayed a significant correlation for the number of beds for the hospital the survey respondents worked (F=3.759 p=.011) but none was seen for gender, age, occupation, level of experience or position. In the categories of "there is enough support from the administration for quality improvement activities," "adequate human resources have been secured to pursue quality improvement projects" and "there is sufficient funding set aside for the quality improvement projects," a significant difference was displayed according to the size of the hospitals. As there have not been preceding studies conducted with these parameters, it is hard to make a comparison, but as this study surveyed smaller. Hospitals with 100 to 600 beds, it is credible that the budget and human resources according to hospital size influenced the activities for improving quality control. Accordingly, Shortell *et al.*[16] and Lee[5] stated that there are organizational cultural, technical, strategical and structural obstacles for improving the quality of medical service.

There have not been many studies analyzing the experiences of domestic hospitals; therefore, there are limitations in comparing the level of quality improvement activities and the success factors for these types of hospitals, and various aspects need to be separately researched. To maximize the quality control for medical service for each hospital, it is also important to establish flexible plans and systematically select the focus of these activities depending on the areas of need. Choi *et al.* [17] states that improving the quality of medical service requires a large amount of time and effort, and its success depends on the interest of the manager or the administration, and it may result in result-focused activity with no relevance. In particular, the staff of the hospital does not feel the

need to change their routine due to a busy schedule. For this, full attention and support of the head of the hospital is critical in visualizing the needs of the project if the quality of medical service is to be enhanced within a short timeframe [5]; this also requires the participation of the administrative committee and the department heads. The head of the hospital should be made accountable for the changes required. It should be noted that when the interests of a given department is in conflict for the activities required for improved quality, it is also difficult to resolve the issue without the support of the administration, and that this backing from the administration is important for implementing the required activities.

Knowledge and technical support for performing quality improvements correlated similarly with respect to occupation and position, indicating that the aforementioned support for training programs appears to be an important contributing factor leading to the success of the activities. A similar result was also for budgetary support and rewarding achievements, and in Choi *et al.* [17], lack of funding was shown to be the largest obstacle in pursuing activities for improving quality. Also, Oh [18] argued that securing the necessary budget is an important factor in promoting the necessary activities for improving the full support of the head of the hospital was deemed be more important than structural efforts for achieving success in quality control in domestic medical institutions.

For activities in improving quality of care and the factors influencing them, the organization's culture and the technical and structural aspects had a statistically significant correlation (r=.075, P<.001 for organization's culture, and r=.242, P<.001 for the technical and structural aspects). This was also suggested in Lee *et al.*[9] and Choi *et al.*[17] in that although there are numerous factors accounting for the success of medical service quality improvement, adequate levels of knowledge and skill are required. Thus, it is important for a hospital's administration to sponsor and encourage their staff in activities for improving the quality of care and by improving an organization's culture, improving the staff's knowledge and skill set and having effective teams.

#### 5. Conclusion

From this study for the municipal hospitals, it was concluded that improvements in quality of care and increasing the reputation of the hospital should be consistently realized through effective quality control activities for the staff. For the municipal hospitals as the citizens want improved service and quality of care, effective quality control activities are required, and to achieve this, a policy to prompt activities for improving the quality of a reward system and recognition, administrative support and system for conflict resolution between team members and departments ought to be prioritized in order for the staff at the municipal hospital to participate more actively. In addition, full support of the hospital administration and strategic factors are deemed to be more crucial than structural factors.

There was a culturally, technically and structurally significant relationship between the areas of medical service for quality improvement. Thus, sustained management of those fields needs to take place in order to promote activities for improving quality of care. In addition, for the municipal hospitals, a support system is needed between the hospitals in providing the right expertise and training for staff in order to achieve success in improving the quality of medical service provided. In other words, the municipal hospitals need to share and exchange knowledge and case studies and promote improvement of quality through an objective evaluation.

We recommend the following: First, identify the obstacles in preventing the municipal hospital staff in performing activities for improving the quality of medical service. Second, identify the extent of improvement effects according to the municipal hospital staff's activities for improving care. Third, suggest a replication study for monitoring municipal hospital staff for activities in improving the quality of medical service and the factors influencing them.

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