



# Feasibility to Expand Complex Wards for Efficient Hospital Management and Quality Improvement

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## Abstract

**Purpose:** This study aims to explore the feasibility of expanding complex wards to provide efficient hospital management and high-quality medical services to local residents of Gangneung Medical Center (GMC). **Research Design, Data and Methodology:** There are four research designs to achieve the research objectives. We analyzed Big Data for 3 months on Social Network Services (SNS). A questionnaire survey conducted on 219 patients visiting the GMC. Surveys of 20 employees of the GMC applied. The feasibility to expand the GMC ward measured through Focus Group Interview by 12 internal and external experts. Data analysis methods derived from various surveys applied with data mining technique, frequency analysis, and Importance-Performance Analysis methods, and IBM SPSS statistical package program applied for data processing.

**Results:** In the result of the big data analysis, the GMC's recognition on SNS is high. 95.9% of the residents and 100.0% of the employees required the need for the complex ward extension. In the analysis of expert opinion, in the future functions of GMC, specialized care ( $\Delta 3.3$ ) and public medicine ( $\Delta 1.4$ ) increased significantly. **Conclusion:** GMC's complex ward extension is an urgent and indispensable project to provide efficient hospital management and service quality.

**Keywords:** Public Health Care, Medical Center, Hospital Management, Ward Extension, Service Quality

**JEL Classification Code:** I10, I13 I18, L30

## 1. Introduction

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Currently, population growth, increasing prices and poor distribution of resources has led to a special approach and attention to productivity and efficient utilization of existing resources (Langroudi & Kakhani, 2017). Government involvement in the healthcare sector is a common phenomenon worldwide (Ali1 & Sayed, 2020). As of October 2020, all 35 local medical centers deployed in cities and counties across the country. Among those, 5 local medical centers (Gangneung, Samcheok, Yeongwol, Wonju, and Sokcho) are operating in Gangwon-do.

These medical centers are obligated to protect the public from diseases (Article 34 (1) and (5) of the Constitution), and for this purpose, it is responsible for providing flawless medical services to underdeveloped areas and the vulnerable (Sun, 2016).

These medical centers provide health care to local residents according to regional characteristics, and carry out a number of activities and health care projects such as health promotion and prevention education programs for local residents. Gangwon-do has many medically

vulnerable areas that are far from rugged mountainous areas, so the main role and function of the five local medical centers in Gangwon-do is to provide essential public health services to address geographical accessibility.

However, due to the recent development of road traffic and highways, the opening and operation of KTX, and the high-speed rail business, the number of patients with "Adverse Medical Tour Shopping" increased from Gangwon-do to urban areas. In addition, there are significant changes in medical demand, such as increasing competition among hospitals in the region, and a decrease in the number of patients admitted to local hospitals due to the aging population and declining fertility rates in the region due to the migration phenomenon. Hospitals are one of the most important components of health systems and the main consumers of resources allocated to medical system, because hospitals:

1) Are the largest operational units in health system 2) Account for the largest share of healthcare expenditure (Saikhani, 2004).

In addition, the poor professional man network of local medical centers, obstacles in facility and equipment investment, and the avoidance of local medical care by excellent specialists compounded, causing local medical centers to face great difficulties in terms of provision of treatment and finance. In particular, after the introduction of the division of medicine, the introduction of an actual transaction price reimbursement system and the limited operation of compensation for medical expenses due to deteriorating health insurance finances made it more difficult for local medical centers to become financially independent (Yang, 2012). In general, local medical centers continue to suffer from oversupply due to the opening of a new private general hospital and the expansion of the existing private general hospital (Lee, 2017).

In particular, Gangneung Medical Center (GMC) in Gangneung city is in the third important position in Gangwon-do due to its urban and financial scale, but the composition of professional medical personnel and medical facilities such as medical equipment and operating rooms are facing the worst situation among the five medical centers in the province. With the recent increase in demand for patient satisfaction, it is unquestionable why there is also an increase in demand and search for quality healthcare services from our healthcare providers in our society, which believed to be the one of the reasons behind patient satisfaction (Potluri & Angiating, 2018).

Therefore, this study aims to analyze the overall status and actual condition of GMC's operation in order to improve the management efficiency of GMC and fulfill its responsibilities as a public medical institution based in the region, and analyze the feasibility and necessity of the expansion project of the complex ward. It has the publicity

and public interest of providing essential health care services as public interests, an important management principle that is also the purpose of the existence of a public corporation (Lee et al., 2012). On the other hand, as an independent medical institution, we want to examine two aspects of promoting profitability as an independent economic organization that must create consistent profitability through operational efficiency. Hospitals have difficulties in pursuing publicity and profitability at the same time, so if an adequate level of profit is not generating, the hospital's financial condition deteriorates, making it impossible to provide high-quality medical services, the primary goal of the hospital (Lee, 2009).

## **2. Theoretical Background**

### **2.1. Understanding of Local Medical Centers (LMC)**

As governments seek to improve population health, the provision of equal access to medical care defines an important determinant of health and a core objective for health policy (Kim et al., 2017). Rural health care systems have their own set of challenges (Wells et al., 2020). Local medical centers are health care institutions that play a pivotal role in the national public health care system along with the National University Hospital, the National Medical Center, and the Public Health Center. As of October 2020, there are 35 local medical centers established by local governments as regionally responsible medical institutions and regional base public hospitals.

Local medical centers not only contribute to the development of local health care, but also focus on promoting and preventing the health of local residents rather than profit making. In particular, local medical centers are health care institutions operated by local governments, which are difficult to entrust in private hospitals, and promote the health of low-income people and those who are subject to livelihood protection in the region to achieve equity in medical services (Jeon & Kim, 2010).

### **2.2. History and Foundation of LMC**

As a local medical institution in Korea, the LMC first established in 1910 as a Jahye Hospital established under the local control of the Chosun Governor-General to play the role of a medical safety net for medically vulnerable areas and local residents (Yang & Lee, 2017). Since then, the name and form of local medical centers have changed to municipal and provincial hospitals in 1925 and medical centers of local public corporations in July 1982. The type of local medical center operated in the form of a

corporation by investing entirely in municipalities and provinces in accordance with the Ordinance for Establishment of Local Corporation Medical Centers. Afterwards, the local medical center transferred from the Ministry of Health and Welfare to the Ministry of Health and Welfare in September 2005, and managed by the Public Medical Division of the Ministry of Health and Welfare (Lee, 2009).

The government was established the basis for fostering and developing LMC by enacting the “Act on Establishment and Operation of Local Medical Centers” in July 2005, and is being established and operated by the ordinances of each local government. In addition, in the same year, the government established a “comprehensive measure to expand public health care,” and promoted the reform of the public health care system, and decided to foster local medical centers as local public hospitals (Huh, 2015).

### 2.3. Major Roles and Functions of LMC

Medical service centers primarily serve to secure and expand hospitals' portfolios (Olkert et al., 2020). The main roles and functions of local medical centers may differ depending on the geographic characteristics of the medical centers located in each region and the characteristics of local government organizations. However, its basic function is to install and operate essential medical facilities such as emergency rooms and intensive care units, as well as to perform medical safety net functions for the underprivileged, such as medical benefits. Another function is to carry out public medical policies of the state and local governments, and to play the role of occupational diseases for industrial workers, sex education and smoking for adolescents, medical treatment for the disabled, dementia and mental health (Lee, 2012).

In addition, local medical centers provide intensive medical care for emergency and severely ill patients in the region in case of emergency, such as a strike or various disasters of private medical institutions (Lee et al., 2011)

### 2.4. Health and Medical Conditions and Problems in Gangneung-city

#### 2.4.1. Status of Medical Institutions in Gangneung city

Gangneung city's population in the region as of 2018 was about 212,957 people, and the gender ratios of men and women are almost the same. Among them, the number of elderly people is 40,815, the number of children and adolescents is 36,850, and the number of births is 1,020. Gangneung city's main medical catchment areas are not only the whole of Gangneung city and secondary medical catchment areas include 27,490 myeons in Yangyang-gun,

43,592 people in

Pyeongchang-gun, and 38,429 people in Jeongseon-gun. Other medical catchment areas included 6,012 in Yangyang-gun, 30,544 in Pyeongchang-gun, 8,435 in Jeongseon-gun, and 25,000 in Donghae city in the border area. The total number of medical institutions in Gangneung City is four general hospitals (2 hospitals, 4 nursing hospitals) and one special hospital. As one general hospital scheduled to designate a third general hospital in 2021, a shortage of 2nd general hospital beds expected in Gangneung from next year.

#### 2.4.2. Analysis of Medical Demand and Supply Status

The number of population in the area of Gangneung city tends to decrease or maintain. However, the number of elderly people aged 65 or older is on a continuous increase. The ratio of the elderly population to the total population accounted for 19.1% as of 2018, significantly higher than the national average of 14.2%.

Since 2013, the mortality rate of Gangneung citizens has been ranked the 1st malignant neoplasms, 2nd cerebrovascular disease and 3rd heart disease. The use of medical institutions in Gangneung city is high because of the high Relevance Index (RI) of trauma or cardio-cerebrovascular disease, which is the statistical indicators used to grasp medical use (Park & Lee, 2019).

The supply of hospital beds in Gangneung city excessively distributed mainly to medical institutions in Gangneung city, only those that provide only those in the acute phase after treatment such as surgery, trauma, stroke, and myocardial infarction. In such a case, excessive competition in the medical market is encouraged to pursue medical services centered on private hospitals, which negatively affects the existence of local medical centers and the provision of public medical services in the future (Jeon & Kim, 2010). In conclusion, there are currently insufficient hospitals in Gangneung city that can provide intensive rehabilitation and post-operative management after surgery, trauma, cardio-cerebrovascular treatment, etc. in medical institutions.

#### 2.4.3. Unmet Medical Needs

Unmet medical needs defined as an 'experience that a patient needed to use the medical service but did not receive' (Lee & Lee, 2015). Although Gangneung has a smaller population than Wonju and Chuncheon, as the major cities of Gangwon-do, as shown in the chart below, the unmet medical needs rate (14.6%) is the highest. This, conversely, means that there is a lot of potential medical demand.

Unmet essential medical care is included in the evaluation criteria for regional public hospitals (2018, compliance with regional public hospital function reinforcement projects). This is included in mental health,

rehabilitation, hospice, and home care, so high levels have very negative consequences for the evaluation of local medical institutions.

## 2.5. Treatment Status of GMC

### 2.5.1. Construction Year of the Building of GMC

GMC was established in 1913 for the first time among 5 Gangwon-do medical centers, and the current medical center's building is more aging than other medical centers in Gangwon-do.

### 2.5.2. Number of Hospitals Approved for Treatment at GMC

The hospital bed supply and demand status of GMC is as follows, and the total number of licensed beds is 112. Most of the beds are general beds, and some special beds are negative pressure beds. The number of medical departments and specialists in each department as of October 2020 at GMC is as follows. There are 10 subjects in total, mainly internal medicine, surgery, and orthopedics.

### 2.5.3. Status of Medical Use Flow to GMC

The 2019 GMC's CI (commitment index) was 43.35%, including Gangneung city and Gangneung others. Since the CI of GMC is relatively low, it is necessary to improve the CI by securing regular customers by reinforcing and improving the level of professional treatment. Other than Gangneung, Pyeongchang and Jeongseon are also included in sub-medical areas, but other areas other than Gangneung city occupy 51.44%, so sub-medical areas are widely distributed outside of Gangneung city.

### 2.5.4. Major Performance Status of GMC

The chart below shows the results of surgery and delivery, as well as hospitalization and outpatient results, which directly related to the major management balance of GMC. The performance of orthopedic surgery accounts for a significant portion of the hospital's revenue. In addition, although the operation of inpatients has a greater effect on management profit than the outpatient treatment, the hospitalization performance increases and decreases repeatedly.

**Table 1:** GMC's Surgery and Delivery Performance

Operation (2018 year)				
Number of surgery	Number of anesthesia	Medical department		
		1st	2nd	3rd
1,613	40	Orthopedic 1	Orthopedic 2	General surgery

(Source: Gangneung Medical Center, Function reinforcement business information, 2019)

From Table 4, which reflects the financial difficulties of GMC, it is easy to identify the inefficient management status of GMC, especially among statistical data in which almost all five medical centers in Gangwon-do have snowballed net losses.

**Table 2:** GMC's 3-Year Hospitalization and Outpatient Performance

Year	Admission		Out-patient
	Yearly Patient Census	Actual Number of People	Yearly Patient Census
2018	30,887	1,740	87,636
2017	31,521	1,810	86,604
2016	30,955	1,976	84,947

(Source: GMC, Function reinforcement business information, 2019)

The table 3 below shows the cumulative and chronic fiscal deficit of GMC and the factors that received the lowest point in the evaluation of various public medical institutions.

**Table 3:** Net Loss of Local Medical Centers

Medical Center	2016	2017	2018	3 Years Cumulative
Gangneung	△2,23	△ 1,91	△ 978	△5,130
Samcheok	△ 1,92	△ 1,83	△ 1,191	△ 4,944
Youngwol	△ 1,48	△ 1,63	△ 262	△ 3,378
Wonju	△ 1,59	△ 1,23	△ 792	△ 3,617
Sokcho	△ 1,29	△ 2,52	△ 1,144	△ 4,965

(Source: National Medical Center, Public Health Care Support Center, 2020)

**Table 4:** GMC's 3 Year Business Balance (unit: million)

Year	Profit or Loss	Medical Profit and Loss	Non-medical Profit and Loss
2018	△518	△2,983	2,465
2017	43	△2,300	2,343
2016	1,527	△1,238	2,765

(Source: GMC, Function reinforcement business information, 2019)

## 3. Research Method and Data Analysis

The specific research methods for investigating the necessity of extension of the complex ward in GMC largely classified into four categories. First, to find out the

perceptions and attitudes of local residents of medical institutions and GMC in the region, for about 3 months from January 1 to March 27, 2020, Big Data on SNS (Social Network Service) analyzed. In addition, a survey conducted on patients using GMC and employee in order to find out specific treatment and treatment contents of GMC.

The questionnaire surveyed from 219 medical users, 20 employees, and 12 experts from February to March 2020. The survey data of employee of GMC analyzed by frequency analysis to analyze the internal medical capabilities and status of GMC. Finally, a Focus Group Interview (FGI) conducted for experts inside and outside the GMC, and the results analyzed by IPA (Importance-Performance Analysis). All data processing analyzed by applying IBM SPSS statistical package program version 21.0.

## 4. Research Results

### 4.1. Results of GMC's Big Data Analysis

Data mining techniques through representative SNS such as Daum, Naver, Twitter, and Instagram used. Using this data, contents related to medical treatment extracted from the many Big Data related to GMC, and a chart that summarized and analyzed these contents presented below. With each click, share, like, and swipe, society is creating big data (Lee, 2020). The awareness of GMC or related articles or contents are mentioned second most frequently after Gangneung Asan Hospital on most SNS, but this recognition or attention is not linked to actual treatment income or service use of GMC.

**Table 5:** Big Data Extraction Results for General Hospitals

SNS Hospital	Daum			Naver			Twitter	Instagram
	News	Blog	Cafe	News	Blog	Cafe		
Gangneung M.C.	11,100	8,540	14,000	12,497	12,413	3,984	82	250
Asan hospital	15,900	16,600	21,800	14,502	22,070	3,857	622	1,730
Dongin hospital	2,630	2,690	4,200	3,040	4,363	1,373	70	113
Koreo hospital	3,540	7,250	21,200	3,782	14,055	3,345	14	22

### 4.2. Survey on Clients Using GMC

For adult male and female clients who visited GMC, a structured questionnaire will distribute randomly for about 7 days from February 14 to February 20, 2020, and the self-administered questionnaire asked to clients to fill out. As a result, of the response and collection, 219 people responded.

#### 4.2.1. Respondent's General Characteristics

As for the demographic and sociological characteristics of the survey respondents, the ages were 50 to 59 years old (21%), 40 to 49 years old (16.9%) in order, and by gender, females were much higher with 63% female and 35.6% male. As for the residential area, Gangneung city was overwhelmingly large with 80.4%, followed by Donghae city 9.1%, Pyeongchang 5.0%, Jeongseon 3.2%, and Yangyang 2.3%. The period of residence was 34.7% for more than 20 years, and 21.9% for 10-20 years. When looking at the type of insurance covered by medical insurance, the national health insurance accounted for 74%.

**Table 6:** General Characteristics of Clients

General characteristics		(Number)	(%)
Classification	Items	219	100.0
Age(year)	Under 29	37	16.9

	30~39	34	15.5
	40~49	37	16.9
	50~59	46	21.0
	60~69	33	15.1
	70 years old or older	32	14.6
Sex	Male	78	35.6
	Female	138	63.0
	No-response	3	1.4
Residence area	Gangneung	176	80.4
	Donghae	20	9.1
	Jeongseon	7	3.2
	Pyeongchang	11	5.0
	Yangyang	5	2.3
Residence period (year)	Within 1 year	19	8.7
	1~3	32	14.6
	3~6	20	9.1
	6~10	23	10.5
	10~20	48	21.9
	More than 20 years	76	34.7
Insurance	No-response	1	.5
	National health insurance	162	74.0
	Medical aid	17	7.8

	Car insurance	4	1.8
	Industrial Accident Compensation Insurance	7	3.2
	Uninsured	23	10.5
	Other	5	2.3
	No-response	1	.5

#### 4.2.2. Reasons to Use GMC

Health consciousness refers to consumers awareness of their health issues when choosing daily foods such as vegetables, fruits, meat, fish, etc. (Tran et al., 2020). The main reasons for using GMC are 'close distance (convenience)' 97 (37.7%), 'various treatment care' 28 (10.9%), 'doctor's competency (specialty)' 27 (10.5%), '24 people (9.3%), 'cheap medical expenses' in order.

#### 4.2.3. Necessity for the Complex Ward Expansion Project of GMC

Regarding the necessity of the project of complex ward extension 95.9% of the respondents indicated that they wished for the complexed ward extension project, 2.3% said it was not necessary, and the remaining 1.8% expressed other opinions.

### 4.3. Survey on Employees at GMC

For about 7 days from February 14 to February 20, 2020, a structured self-administered questionnaire distributed randomly to male and female workers, excluding doctors currently working at Gangneung Medical Center. In result of collecting these employees by responding to the questionnaire in a self-written method, 20 respondents. Their main duties consisted of 9 administrative workers, 4 health workers, 2 nursing workers, 1 medical technician, and 4 others.

#### 4.3.1. Socio-demographic Characteristics

The main age of respondents was 50 to 59 years old (45%), 30 to 39 years old (40%), and by gender, men were 55% and women 40%. The working period was relatively long in the order of 20 years or more, 45%, 6 to 9 years, 25%, and so on. Looking at the working positions, the 7th grade was 35%, the 5th grade and above 25%, the 8th grade 15%, and so on.

**Table 7:** General Characteristics of Employees

General characteristics		(Number)	(%)
Variables	Items	20	100.0
Age (year)	30~39	8	40.0
	40~49	3	15.0
	50~59	9	45.0

Sex	Male	11	55.0
	Female	8	40.0
	No-response	1	5.0
Residence period (year)	Within 1year	1	5.0
	1~3	1	5.0
	3년~6	2	10.0
	6년~9	5	25.0
	10~20	2	10.0
	More than 20 years	9	45.0
Job family	Nurse	2	10.0
	Public health	4	20.0
	Management	9	45.0
	Medical engineer	1	5.0
	Other	4	20.0
Job grade	Grade 5 or higher	5	25.0
	6	2	10.0
	7	7	35.0
	8	3	15.0
	9th grade or less	1	5.0
	Other	2	10.0

#### 4.3.2. Necessity for Complex Ward Extension Project of GMC

Regarding the necessity of the complex ward extension project, 100.0% of the employees of GMC found to wish for the complexed ward extension project, indicating that almost all of them were aware of the actual need for facilities, professional man power structures, and treatment capabilities of GMC.

#### 4.3.3. Superiority of GMV over Other Medical Institutions in Gangneung

The survey results are about the superiority of GMC compared to other private hospitals in Gangneung city, 16 people (30.2%), "low medical expenses," 14 people (26.4%), and "kindness of medical staff (staff)" 7 people (13.2%) appeared in order.

### 4.4. FGI Opinion Survey of GMC on Internal and External Experts

A total of 12 internal and external experts, including 8 doctors and nurses currently working at GMC, and 4 external experts who are not GMC, were surveyed. From February 14 to February 28, 2020, a structured self-administered FGI opinion survey questionnaire distributed by e-mail and collected by freely responding to the open self-written questionnaires. A total of responded in all.

#### 4.4.1. Major Occupations and Work Status of Internal and External Experts

The main occupations of GMC's internal experts are doctors and nurses, and the main occupations of external experts are doctors, professors of the Graduate School of Public Health, the head of the health association, and the representative of health care consulting.

The main contents of the FGI opinion survey include a comparison of the current and future functions and roles of GMC, a comparison of the detailed present and future functions and roles of GMC, re-establishment of the functions of GMC, and plans for long-term development.

#### 4.4.2. Main Function and Role of GMC

According to the results of the survey, the proportion of general medical care decreased the most, but it occupies the largest proportion in the future functions and roles of GMC. The areas that recognized as important for the future function and role of GMC are special care (13.9), public medicine (11.8), specialized care (10.8), and public medical service (10.7).

**Table 8:** Current and Future Roles of GMC

Function and role (Present → Future)	Increase & decrease
(General treatment)	▼11.1(41.4 → 30.3)
(Specialized care)	△3.3. (7.5 → 10.8)
(Special treatment)	△0.3 (13.6 → 13.9)
(Public health care)	△1.4 (10.3 → 11.8)
(Public health care business)	△06. (10.0.→ 10.7)
(Public medical support)	△0.1 (8.1 → 8.2)
(Education and training)	△0.5 (6.9 → 7.4)
(Other) image making, promotion, citizen participation , etc.	△2.5 (5.5 → 8.0)

It can provide important clues. Looking at the increase in future functions and roles, professional medical care (△3.3), others (△2.5), and public medical care (△1.4) showed an increase in order.

## 5. Discussion

In the past, the traditional public health services are provided by community health service centers and township health centers, including health records management, child health, maternal health, health of the elderly, health of patients with chronic diseases, health of severe psychiatric patients, health education, infectious diseases and public health emergencies, and health supervision and

management information (Zhaoa et al., 2020).

The importance of public health services in local health care centers has increased significantly in modern times. In the event of an irregular demand for the customer's service, it is not possible to respond immediately through sufficient pre-stocking, and then the purpose of using the customer's service changes, the company will change the evaluation despite efforts to meet the customer's needs (Kim, 2009). In terms of population status of Gangwon-do, among 7 major cities and 11 counties, Wonju 340,000, Chuncheon 280,000 and Gangneung 220,000 are the three cities in Gangwon-do with a large population. It shows a big difference from 90,000 in Donghae 80,000 in Sokcho and 71,000 in Hongcheon, and 69,000 in Samcheok.

Environmental problem solving in regions should be a goal achievement in the field of diagnostics and innovations in science and medical technology (Yessentay et al., 2020). Compared to major cities in Gangwon-do, Gangneung has a high population ratio and average age, and the total fertility rate is low, leading to a decrease in population. However, Gangneung ranks 1st in unmet medical need rate, 2nd place in suicide rate, and has high smoking and drinking rates. Conversely, the 6th place in vaccination rate and 7th place in health practice rate are the lowest. Efforts needed to improve local residents' awareness of medical institutions (Lee, 2011).

Comparing the current-status of five local medical centers in Gangwon-do, GMC first established in 1913, and the building is not only deteriorating. GMC is in an urgent need of reinforcement in terms of facilities as it has the relatively smallest number of beds, professional man powered rescue, and medical equipment compared to other medical centers. This is because this aspect can lead to a decrease in external credibility and a decrease in awareness, leading to a chronic deficit (Lee et al., 2014). Healthcare providers working within primary medical centers have a unique opportunity to manage pain and reduce patients suffering, hence their skills and knowledge of pain management guidelines should be maintained updated.(Alkhatib et al., 2020).

Now, by introducing facilities and equipment that enable local medical centers to secure a certain amount of profit, they can achieve customer satisfaction and secure profitability through improved service quality. The existing research primarily accessed the key factors of medical quality and costs to explain health customers' behavior but is limited in terms of enabling an understanding of the decision process (Zhang & Lee, 2015). It is necessary to introduce innovative management techniques along with the transfer of authority to a level that is at a high level (Yang & Lee, 2017). In addition, in terms of management structure, GMC recorded the largest net loss almost every year in its management structure, so it is necessary to

consider innovative management improvement or restructuring plans for the future. Basic concepts for understanding behavioral health prevention and integrated primary care reviewed along with research on the effectiveness of preventive interventions (Melchert, 2020).

New consumption trend that gives priority to wellbeing expanded in accordance with high level of standards of living life (Kim et al., 2010). Comparing the current-status of the four general hospitals in Gangneung City, the competitiveness of health care has been lost because the number of hospital beds, intensive care units, operating rooms, emergency rooms, and physical therapy rooms are lower than that of the three private hospitals. In addition, GMC has a large difference compared to other private general hospitals, so the number of courses, specialists, and special treatment functions are also low. If there are many medical institutions of the same or similar size in the region, a decline in performance expected due to mutual competition (Park, 2012). Efforts to provide specialized services are required, such as having specialized functions of medical treatment that can secure a competitive advantage in competition with private hospitals in local medical centers (Lee, 2017).

## 6. Conclusion and Limitations of the Research

This study is to analyze the feasibility and necessity of increasing the wards of the public functioning Gangneung Medical Center located, taking into account the health and medical conditions, supply and demand situation, human and physical resources, etc. in Gangneung City. Most public health interventions assessed by the National Institute for Health and Care Excellence (NICE). was estimated to be cost-effective (Owen & Fischer, 2019).

Comparing the current-status of five local medical centers in Gangwon-do, GMC first established in 1913, and the building is not only deteriorating. GMC is in an urgent need of reinforcement in terms of facilities as it has the relatively smallest number of beds, professional man powered rescue, and medical equipment compared to other medical centers.

With the results of big data surveys and surveys for clients using GMC, surveys for internal employees working at GMC, and FGI opinion surveys for doctors and nurses currently at GMC, FGI opinion surveys from external experts, and IPA analysis results, they responded that “combined ward extension project” was extremely necessary.

However, in detail, 28% of the staff at GMC answered “reinforcement of public medical functions” in the case of “complex ward extension project”. In the FGI and IPA

analysis of internal and external experts, in the case of “combined ward extension project”, “public medical service and special treatment” responded, and compared to other private hospitals in Gangneung City, the feasibility and necessity of extension recognized on the premise of adding public functions. However, in this study, specific considerations such as how many beds should add and which treatment courses should add or open not described in more detail. And it does not include the degree to which professional manpower and facilities level should be considered. Therefore, it is necessary to describe and discuss additional considerations so that an empirical plan can be prepared in future research.

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