

Thoracic and Cardiovascular Surgeons' Perception of the Concentration of Cardiovascular Operations in Seoul Metropolitan Area's Hospitals

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Background: The purpose of this study is to evaluate the concentration of cardiovascular surgical procedures in a metropolitan area and investigate the perception of specialists regarding governmental policies to resolve this imbalance. **Methods:** From March to May 2015, surveys were distributed to members of the Thoracic and Cardiovascular Surgery Association. The final pool of research subjects consisted of 75 respondents. Subjects were queried regarding the concentration of cardiovascular operations in metropolitan areas, alternatives to the imbalance, and governmental policies to resolve the inequalities. **Results:** Survey participants responded that South Korea needs governmental policies to alleviate the concentration of cardiovascular surgery patients in large metropolitan hospitals. Participants agreed that the freedom to choose medical institutions and improved accessibility to metropolitan hospitals due to advanced transportation systems were some of the causes for the concentration. A majority (98.7%) of respondents thought establishing thoracic and cardiovascular surgery centers in provinces was an appropriate solution to alleviate the concentration. Thoracic and cardiovascular surgery specialists were ranked as the number one group on which to focus development. **Conclusion:** Developing and carrying out policies to establish thoracic and cardiovascular surgery centers in provinces will alleviate the regional imbalance in available heart surgery services and an overall improvement in cardiovascular disease treatment in South Korea.

Key words: 1. Cardiac
2. Surgery
3. Health care surveys
4. Health policy
5. Decision making

Introduction

Recently, many countries have emphasized the equality of healthcare, access and efficiency of delivering healthcare services as policy objectives [1]. This

emphasis can not only be found in South Korea's representative health improvement plan, 'The 3rd Comprehensive National Health Improvement Plan,' but also the 'Health Japan' initiative of Japan, and the 'Healthy People' model of the United States [2]. For

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the past several decades, the push for improved access to healthcare caused South Korea to raise salaries in order to prioritize the equality of health financing, such as insurance fees, and the equality of healthcare expenses. Policies that aimed for equality of physical access to medical resources on a macro level were not realistic [3]. As a result, medical personnel and facilities became concentrated in cities, so residents living in farming and fishing communities and on islands had relatively lower access to medical services, and patient concentration accelerated in large hospitals in the metropolitan areas. Compared to the population of residents living in provinces, the proportion of patients treated at metropolitan medical institutions increased from 8.2% in 2004 to 11.4% in 2013. In addition to the number of patients, compared to the population of residents living in provinces, the proportion of medical expenses at metropolitan medical institutions increased 2.6 times, from approximately 950 billion won in 2004 to approximately 2.48 trillion won in 2013 [4].

The South Korean government began countermeasure research and development of policies to alleviate the regional gap in healthcare and the concentration of medical services in the metropolitan areas. Since healthcare institutions and sickbeds are concentrated in Seoul and Gyeonggi Province [5], initiatives included a study that proposes placing more sickbeds in rural hospitals in order to resolve the regional gap in medical resources, and establishing regional cardiovascular disease centers around university hospitals in provinces in order to cover the treatment, rehabilitation, and prevention of internal cardiovascular diseases. Due to the establishment of regional cardiovascular disease centers, the average door-to-balloon time decreased from 70.9 minutes in 2007 to 47.8 minutes in 2012, and the rate of myocardial infarction patient spillover into Seoul decreased from 6.02% in 2007 to 4.93% in 2013 [6].

Cardiovascular surgery data from the department of thoracic and cardiovascular surgery demonstrated that the patient mortality rate due to heart operations was 3.7%, which was higher than the 0.6% mortality rate due to cardiovascular procedures and operations [7]. There was a high regional concentration of operations in the metropolitan area [8]. The high mortality rate from operations [9], when compared to internal cardiovascular procedures, is

because there is still a lack of improvement in surgical treatment and so there is a greater regional gap in healthcare.

Today, gathering individual or group opinions on various interests is central to policy making. Experts have been participating in the policy-making process by providing technical knowledge, intervening in fields related to social conflict or political interests, and their roles have expanded to have real power in determining policy direction [10,11]. The Korean Medical Association has promised to carry out a fundamental governance reform to focus on contributions from experts and transform the structure of policy discourse [12].

South Korea has an equality issue when it comes to the treatment of cardiovascular surgery patients. Recognition of issues such as the regional gap in healthcare services and the mortality rate of cardiovascular surgery patients is needed to formulate and carry out transformative policies at the governmental level. This study aimed to collect the opinions of thoracic and cardiovascular surgery specialists who have direct interest in cardiovascular surgical treatment.

Methods

In this study, perception surveys were conducted on members of the Thoracic and Cardiovascular Surgery Association for a comparison analysis of specialist opinion on the regional imbalance of cardiovascular surgery and measures to alleviate the regional imbalance.

Survey questions were developed through meetings with specialists. The survey was conducted in person, from March to May 2015. The survey was carried out 4 times, once with the board of directors of the Thoracic and Cardiovascular Surgery Association, once with officials of the Daegu North Gyeongsang branch, once with officials of the Central Honam branch, and once with members of the Coronary Artery Research Association. A total of 75 respondents were surveyed as research subjects.

The survey consisted of two parts: the first section asked respondents about the concentration of cardiovascular surgery patients in large metropolitan hospitals and the need for governmental policies, and the second section asked respondents about the causes of the concentration of cardiovascular surgery

patients in large metropolitan hospitals and measures to alleviate the phenomenon. The overall investigation was carried out in the following order: survey the subjects firsthand, gather the completed questionnaires, input and edit data, and analyze data.

SAS ver. 9.2 (SAS Institute Inc., Cary, NC, USA) was used in this study. A comparison analysis of the study results was conducted. In order to compare the differences that could arise from varying age groups, institutions, and duty stations, we conducted a chi-square analysis and had set the significance level at $p < 0.05$.

| Classification | Frequency (%) |
|--|---------------|
| Age | |
| 30's | 7 (9.3) |
| 40's | 26 (34.7) |
| 50's | 35 (46.7) |
| Other | 7 (9.3) |
| Job category | |
| University hospital professor | 63 (84.0) |
| Public clinic practitioner | 10 (13.3) |
| Other | 2 (2.7) |
| Institutions | |
| Comprehensive rehabilitation center | 51 (68.0) |
| General hospital | 20 (26.7) |
| Other | 4 (5.3) |
| Duty station | |
| Seoul | 13 (17.3) |
| Incheon, Gyeonggi Province | 15 (20.0) |
| Gwangju, Jeolla Province/Jeju Island | 12 (16.0) |
| Daegu/Ulsan/Busan, Gyeongsang Province | 22 (29.4) |
| Daejeon/Chungcheong Province | 13 (17.3) |

Results

1) General characteristics

Table 1 presents the frequency and rate per variable for the sample of 75 respondents. The highest rates were: for age, the 50s age group (46.7%), for job category, university hospital professors (84.0%), for institution, comprehensive rehabilitation center (68%), and for duty station, Gyeongsang Province (29.4%).

2) The concentration of cardiovascular surgery patients in Seoul metropolitan area's hospitals and the need for governmental policies

Survey participants (98.8%) agreed that cardiovascular surgery patients are concentrated in Seoul metropolitan area's hospitals. Respondents (96.1%) answered that the demand for surgery had decreased in provinces due to the concentration of patients in the metropolitan area. Respondents (93.1%) agreed that governmental policies were needed to alleviate the concentration of cardiovascular surgery patients in the metropolitan area, 94.3% agreed that governmental policies are needed to increase the number and improve the quality of cardiovascular operations in provincial hospitals, and 98.8% agreed that governmental policies are needed to implement a multidisciplinary system with the internal medicine department in order to increase the number of cardiovascular operations.

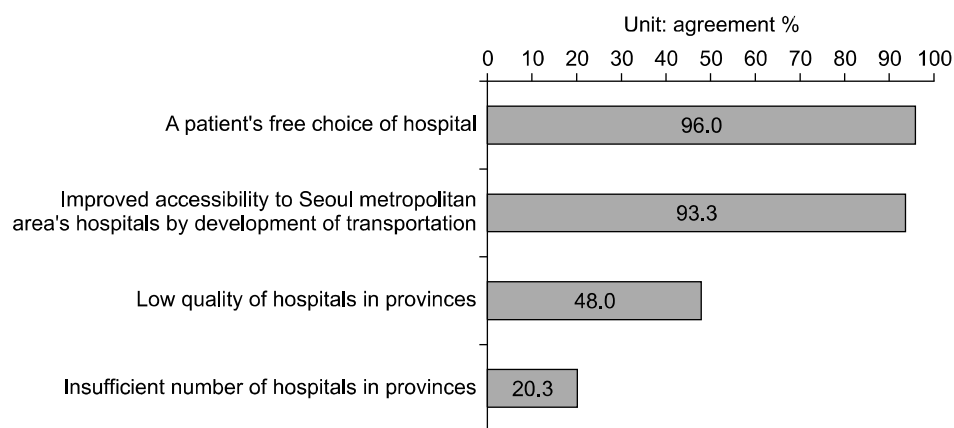


Fig. 1. The causes for concentration of cardiovascular surgery patients in Seoul metropolitan area's hospitals.

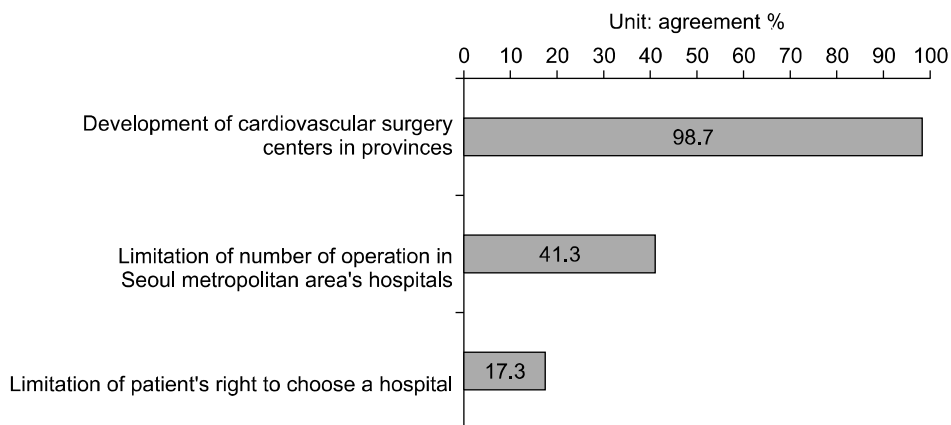


Fig. 2. Solutions for concentration of cardiovascular surgery patients in Seoul metropolitan area's hospitals.

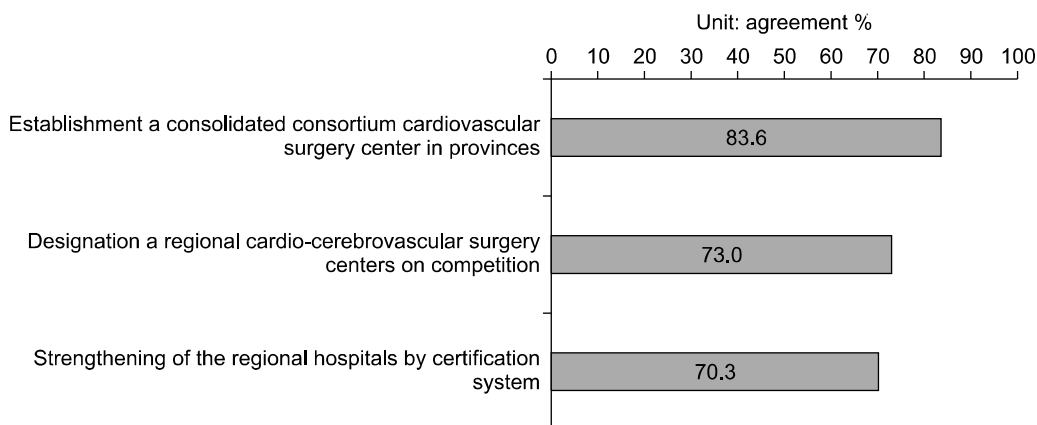


Fig. 3. Development strategy of cardiovascular surgery centers in provinces.

3) The concentration of cardiovascular surgery patients in Seoul metropolitan area's hospitals and measures to alleviate the phenomenon

Fig. 1 summarizes the causes of the concentration of cardiovascular surgery patients in Seoul metropolitan area's hospitals; Fig. 2 summarizes the measures to alleviate the phenomenon. Respondents selected a patient's free choice of hospital (96.0%) as the number one cause of concentration in Seoul metropolitan area's hospitals. Respondents selected the development of cardiovascular surgery centers in provinces (98.7%) as the most effective measure to alleviate the phenomenon.

Fig. 3 presents the development strategy of cardiovascular surgery centers in provinces. The following are statements that respondents agreed with, along with the rate of agreement presented in parentheses: "Establishment a consolidated consortium cardiovascular surgery center in provinces" (83.6%),

"Designation a regional cardio-cerebrovascular surgery centers on competition" (73.0%), and "Strengthening of the regional hospitals by certification system" (70.3%). Respondents ranked the areas to focus the most development when designating regional cardiovascular surgery centers in the following order: on cultivating thoracic and cardiovascular surgery specialists, thoracic and cardiovascular surgery residents, thoracic and cardiovascular surgery nurses and technicians, hospital facilities, and medical equipment.

Discussion

The phenomenon of cardiovascular surgery patient concentration in metropolitan hospitals persists in South Korea. However, currently there is insufficient governmental policy plans and funding to alleviate the concentration and the regional gap in healthcare.

The participation of experts has become an im-

portant factor in making policy decisions. This study aimed to clarify the perception and attitudes of cardiovascular surgery specialists and produce evidence for policy decisions on cardiovascular surgery treatment. By understanding what specialists perceive and suggest, we can propose policies that are in accord with the opinions of both the specialists and the government.

The results of this study reveal that respondents believed South Korea has a concentration of cardiovascular surgery patients in large metropolitan hospitals. Moreover, respondents answered that the demand decreased in regional hospitals for cardiovascular operations due to the existence of large hospitals in the metropolitan area. While respondents agreed that the causes of the concentration in large metropolitan hospitals were the patient's freedom to choose medical institutions and the increased accessibility due to transportation development, they did not agree that there was a regional difference in the quality of medical institutions. There are various reasons why a patient living in a province would not undergo surgery at a medical institution in the same region. Existing studies explain the intensification of the concentration of patients in large hospitals from the perspective of consumers: as their socioeconomic level increases, consumers prefer medical institutions that have high-quality service, superior equipment, and professional medical teams [13]. Cases where the characteristics of the disease require continued treatment and emergency cases in which visiting a medical institution close to home is the most effective treatment, the utilization rate of hospitals in Seoul was approximately less than 10% [14]. Cancer patients preferred to be treated at hospitals in Seoul because of the medical treatment system and transportation, such as the Korean Train Express. When choosing a hospital, a patient based their decision on the following factors, ranked in order of preference: close distance, excellent medical team, convenient transportation, and attentive service [15].

There appears to be a difference in the perception of healthcare service between healthcare suppliers and consumers. Patients choose metropolitan medical institutions because they perceive that the medical treatment is superior, and benefit from the convenient transportation system. However, experts believe there are no problems in regional healthcare

services. Selecting a medical institution is an individual choice, and it is the role of the policy-maker to provide appropriate information and inducements to use healthcare services. Efforts to change the perceptions of consumers should be carried out to resolve the gap between the perceptions of suppliers and consumers.

For plans to develop cardiovascular surgery centers in provinces, 'establishing consolidated consortium surgery centers per area or region' was the most popular choice, while 'designating regional cardio-cerebrovascular surgery centers per region through competition' came in second. The most effective plan must be determined based on evidence, by developing various models and conducting research on their validity.

Respondents ranked the following areas to cultivate in development on regional hospitals, in order of priority: thoracic and cardiovascular surgery specialists, thoracic and cardiovascular surgery residents, and thoracic and cardiovascular surgery nurses and technicians. The current quota for thoracic and cardiovascular surgery residents is decreasing. Experts predict that an intensified shortage in the supply of thoracic and cardiovascular surgery residents will occur by 2030 [16]. In order to solve this problem, the South Korean government increased the insurance fees of thoracic and cardiovascular operations, but the effects of the increase were concentrated in large metropolitan hospitals [17]. There is a severe shortage of necessary thoracic and cardiovascular surgery professionals in regional hospitals. Even if structural policies improve facilities and equipment and raise wages, without a plan to resolve the shortage thoracic and cardiovascular surgery personnel from a macroscopic perspective, the development of regional cardio-cerebrovascular centers is not possible.

Countries are establishing and implementing national strategies to comprehensively manage cardiovascular diseases by reflecting the characteristics of different regions [18-20]. Recently, South Korea has also initiated research to develop policies that reflect the characteristics of different regions to relieve regional imbalance of heart surgery services.

Studies show that the development of regional cardio-cerebrovascular centers enhances treatment results and lowers the national burden of disease [21]. Therefore, strategies to improve cardiovascular dis-

ease treatment on the national and regional levels should be devised based on active policy research. The government should direct its policies to achieve comprehensive treatment and management of cardiovascular diseases at the national level and also present relevant support measures. The authors of this study hope that the government will consider various policy decision mechanisms and cases to determine policies that will produce South Korea's own healthcare policy values for future cardiovascular disease management.

This study has the following limitation: the experience, knowledge, and bias of the respondents could have affected the responses. A variety of studies must be conducted, quantitative and qualitative, for future development of policy to enhance cardiovascular disease treatment.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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