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Diagnosis of Healthy Cities in the Era of Well-being

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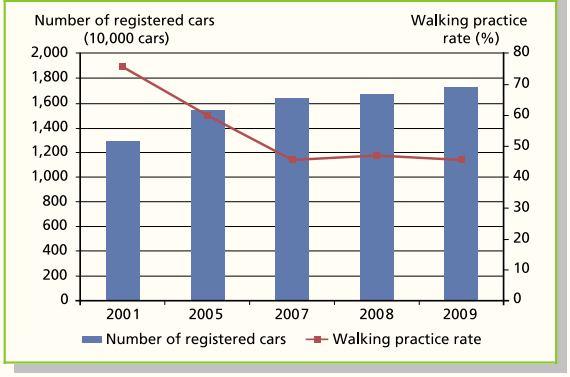
Improvement of quality of life and health

Along with the rapid increase in economic size and urbanization in the recent past, Korea has achieved continuous quantitative growth in urban functions. At the same time, creating an urban environment that improves the quality of life for citizens has, in essence, been neglected. While the GDP of Korea increased 1.6 times from $580 billion to $960 billion between 2001 and 2009, the size of urban parkland per person was reduced on average from 30.08m^2 in 2005 to 26.5m^2 in 2009. During the same time period, the number of cars increased from 12.91 million in 2001 to 17.33 million in 2009 while the percentage of people who exercise regular walking at least 3 times per week has rapidly decreased from 75.6% in 2001 to 46.1% in 2009 (see Figure 1). At the same time, national medical expenses increased approximately 2.2 times from $29 billion to $66 billion between 2001 and 2009. Medical expenses for seniors increased almost 4 times from $2.8 billion to $10 billion. In spite of the increase in medical expenses, the incidence of obesity for those over 19 years old increased from 29.2% to 31.3% and diabetes for those over 30 years old increased from 8.6% to 9.6%. The hypercholesterolemia rate increased from 9.1% to 11.5%.

This study intends to examine the current status regarding the urban environment in Korea in terms of public health, which is closely related to the improvement of quality of life and make suggestions in response to the changing circumstances which include the deterioration of public health and the increasing presence of an aging society.

According to the recent survey of OECD (2011)[1], it was found that the economic index has not been the only important factor in determining the quality of life. For a long time, GDP has been used as the primary indicator to judge the quality of life, but it has limitations

Figure 1: Changes in the number of cars vs. walking practice rate



when it comes to understanding and explaining the quality of life. This study confirms that level of one's health along with various socio-economic factors have an increasing influence on the satisfaction of life (level of happiness).

Based on the idea that various environments of a city are closely related to health, this study emphasized an approach based on the perspective of the broader scope of environments (physical environment and public health environment of a city) that is required for promoting and improving the quality of life for people.

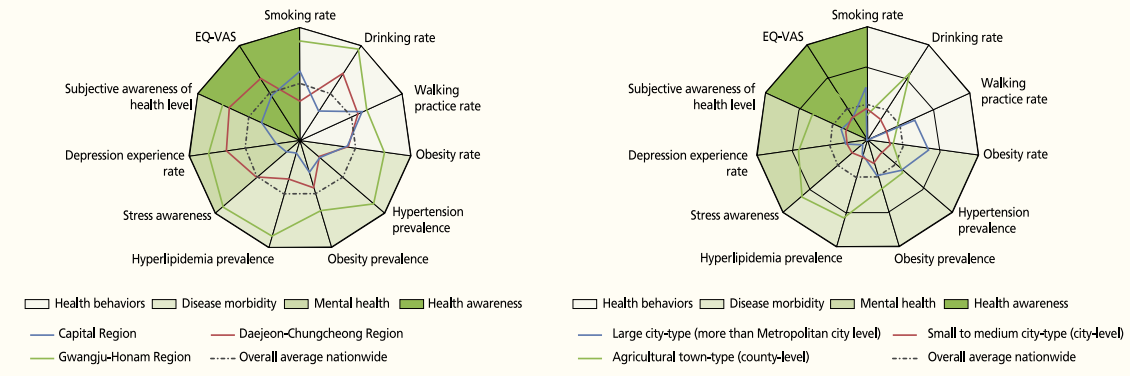
Our study was based on the assumption that "A healthy city refers to a city where people and the place on which they live are healthy altogether." This study was concerned with two criteria: the "health level of people (citizens)" and the "health level of place or urban environments." We attempted to look at this study from a practical perspective in order to diagnose health levels by region. The heath level of people (citizens) consists of four factors: healthy behaviors; disease morbidity; mental health; and health awareness. These four factors were used in analyzing current status on the health level of people.

The "health level of place (urban environment)" refers to the environments of a healthy city and it consists of four factors: institutional foundations; physical environments; practices by citizens; and social environments.

Discrepancy in health levels by city

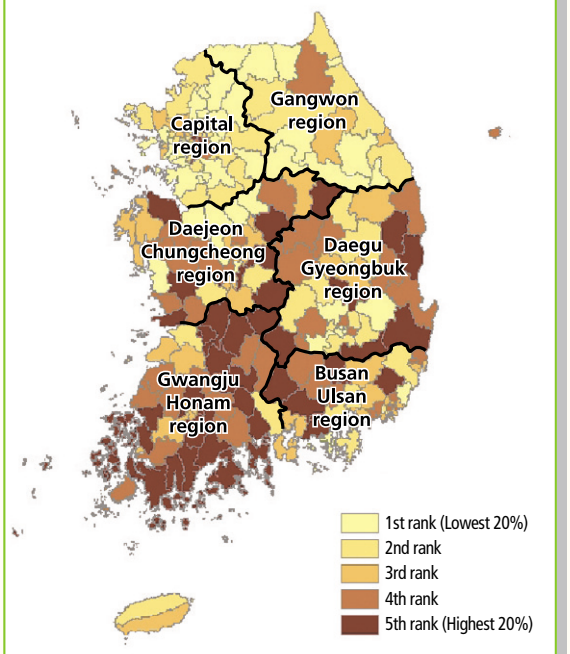
The results of reviewing the health level of citizens are summarized as follows. First, there was no big difference in the indices of the four factors among regions. The health state of citizens did not show a big difference by region, but there was a small difference by region in the factors of mental health (stress awareness and the experience rate of depression) and health awareness (subjective awareness on health level). When analyzing the health level by city size, it was found that those who reside in agricultural areas show a high index score for mental health and health awareness, while those who reside in metropolitan cities show a low score. The awareness of stress, depression experience rate and subjective awareness of one's health level are all subjective factors perceived by a person. The findings coincide with the general opinion that urban

Figure 2: Comparison of health level of citizens by region and city size



1) OECD (2011), How's Life?: Measuring Well-being, OECD Publishing.

Figure 3: Distribution of health level of citizens by region



citizens are subject to more stress and depression and show a lower level of health awareness.

Second, comparing 11 indices of the four factors by region and city size, the indices for the Gwangju-Honam region and other agricultural areas showed relatively higher scores. This result is meaningful in that the Gwangju-Honam region which has traditionally been classified as an area of longevity of life showed high levels of health in this study's analysis. On the contrary, the indices for metropolitan cities, regional large cities, and nearby small and medium cities showed a low level of health as common.

Third, in the comprehensive diagnosis on health level through factor analysis, the health level showed differences in regards to region and city size. In the analysis by region, the level of health in the Gwangju-Honam region showed higher in all factors of healthy behaviors, disease morbidity, mental health, and health awareness. In terms of analysis by city size, there was no significant difference in health behaviors. However, agricultural areas showed higher mental health and health awareness and lower disease morbidity than urban areas. Therefore, agricultural areas showed the highest scores in the overall level of health.

Relationship between urban environment and health level

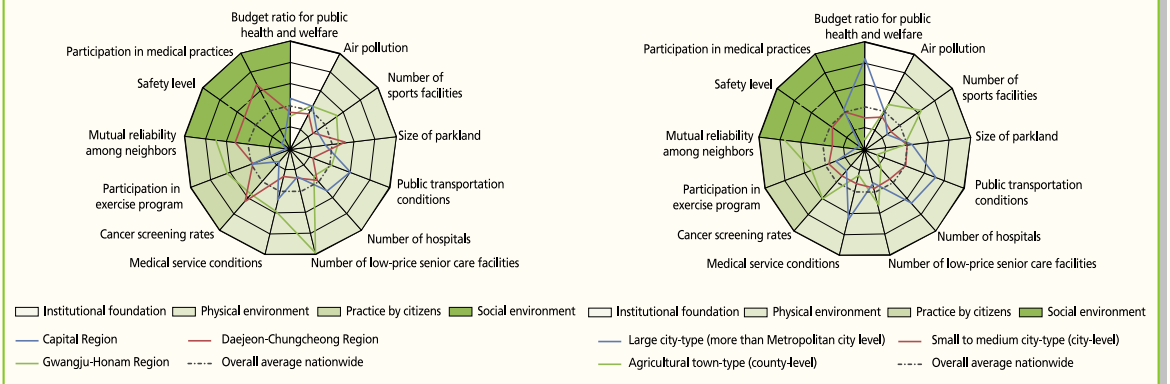
This study identified individual factors, as well as the composite index of "health levels in urban environments," on the basis of the idea that the four factors, "institutional foundations", "physical environments", "practices by citizens", and "social environments" should have a balanced development so as to enhance the health level of a city. Lastly, this study conducted a correlation analysis between the health level of citizens and the health level of urban environments to discover the importance of urban environments in enhancing the health of citizens.

First of all, in a comparison of health level by factors, the factors of "physical environments" and "practices by citizens" showed bigger differences among the regions than the factors of "institutional foundations" and "social environments." As for the physical environment factor, there were big differences in the size of urban parkland per person and in the number of public sports facilities per 100,000 persons. On the other hand, there was little difference in the occurrence rate of traffic accidents per 1,000 persons, though some municipalities showed very high scores, which would probably require an improvement in policy. As for the public health environment, there was relatively small difference among the regions, though some areas had quite low scores in regards to the number of medical personnel in the region and the promotion of public knowledge and education about diseases, which is the foundation for preventive measures.

In the comparison by region, the Gwangju-Honam region showed evenly good scores in all indices except for the institutional foundation factor. Capital Metropolitan areas showed low scores in the social environment index, which is represented by mutual reliability among neighbors, safety levels and participation in socializing activities. This indicates that rapid population growth and urban development in Capital Metropolitan areas notably decreased the sense of unity and bond in a community.

In the comparison by city size, while the budgets for public welfare in agricultural areas were relatively low, the indices of "practices by citizens" and "social environments" showed high. On the contrary, metropolitan cities had remarkably high budgets for public welfare, while the indices of

Figure 4: Comparison of health level in urban environment by region and city size



"practices by citizens" and "social environments" were relatively low. Although agricultural areas have been assigned low budgets for public health and welfare in terms of financial investments, they are good in "practices by citizens" and "social environments" which are represented by a sense of belonging to their community and a sense of unity and therefore they showed high scores in overall health levels. On the other hand, large cities invest a great deal of their budgets for public health and welfare but showed quite a low level in the factors of "practices by citizens" and "social environments." It is assumed that an inclination towards individualism and anonymity caused by rapid urbanization seem to be related to this phenomenon.

Reviewing the health level of people by city size, large cities and agricultural areas showed similar level. The health level of small and medium cities was notably low. In particular, in the case of small and medium cities in metropolitan city zones, overall indices were lower than the average of the nation, which indicated that they were inferior in terms of health levels in urban environments.

As a result of correlation analysis in examining the relation between the health level of citizens and the health level in urban environments, it was noted that there was significant correlation between the health level of citizens and the four factors of the health levels in urban environments. In particular, the factors of the public health environment, practices by citizens, and social environments had a major influence on the health level of citizens. According to a statistical analysis used to determine if there was any difference in the health level of citizens by area, based on the health levels in urban environments, there was a positive (+) correlation. Specifically, the health level of citizens in the Gwangju-Honam region was the highest, as it had good health levels in urban environment, whereas the health level of citizens in medium and small cities near the metropolitan city zones was the lowest, because they had the inferior health levels in urban environment.

Suggestions

The suggestions based on the findings of this research are as follows. First, in order to provide a healthy city that creates an environment where all people live healthy and active lives, it is necessary to set urban policies that can develop the four factors of health enhancement infrastructure suggested in this study in a balanced way including "institutional foundations", "physical environments", "practices by citizens" and "social environments." Second, in order to make the cities in Korea healthier, it is necessary to provide comprehensive guidelines at a central government level regarding policies and the implementation of policies including improvement of the physical environments of a city. Third, in order to improve the physical environments of a city, it is required that city planners include health enhancement factors in existing urban plans and promote health-friendly urban developments and urban regeneration projects. Fourth, it is necessary for municipal governments to provide a "practices" program that corresponds to urban characteristics based on the diagnosis of facts regarding health level and urban environments.

The policy implications of this study can be summarized in three statements. First, it confirms

the necessity for policies that provide a healthy infrastructure for a city from the perspective of enhancing the quality of life. It is required that Korea show more concern in regards to this aspect of various urban environments for the health enhancement of citizens based on diverse theoretical and empirical analyses. Second, this study shows the status on the relation between the health of individuals and the health of Korean urban environments. That is, the study clarified and interpreted the relation between individual health and a city in terms of the location, size and development characteristics of that city. Third, it rated cities according to the health levels in urban environments.

This study will contribute to the creation of policies which will promote healthier cities. This information can also be used to address problems of cities and improve the cities at a local government level.

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Improvement Measures for Cost Sharing Systems for Infrastructure between Central and Local Governments

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Fiscal conditions of central and local governments and infrastructure projects

Infrastructure projects in Korea had been led and funded by government expenditure in the past, but since the introduction of a local self-governing system in 1995, infrastructure projects that sought to reduce the financial burden of the central government have been on the rise. Accordingly, the budget for infrastructure has been either allocated between the central and local governments on a matching basis or the central government has assumed a part of the expenses as a fixed amount or on a fixed rate basis.

In response to a big increase in the welfare budget, the budget for infrastructure projects of the central government has decreased. This, in turn, has caused difficulties for local governments that are financially supported by the central government in carrying out infrastructure projects. As a result, the cost sharing systems for infrastructure between central and local governments are attracting increasing attention. Infrastructure has been built in line with policies and plans led by the central government. Transportation infrastructure such as roads and railroads have played a huge supporting role in the development of the Korean economy and national land, contributing to the accumulation of wealth and improvement of the quality of life. However, due to the implementation of the local self-governing system and the declining fiscal conditions of the central government, building infrastructure which once was the exclusive domain of the central government has shifted to local governments.

As the fiscal conditions worsen, although the central and local governments share the costs of infrastructure projects, projects have frequently been suspended or delayed and negotiations have stalled at the initial stage of the projects often which created inefficiencies. Therefore, it has become necessary to apply appropriate measures in order to continue infrastructure projects without any interruption.

This study seeks to propose improvement measures for cost sharing systems of infrastructure projects between central and local governments which enable seamless implementation of infrastructure projects. The tern infrastructure used in the study refers to the road and rail system.

Determining the responsible party for cost-sharing according to classification of transportation infrastructure

First, transportation infrastructure may be classified