



Vision, Goals, Strategies, and Programs for Healthy City Seongnam, Korea

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Abstract

Background/Objectives: Seongnam has 972,623 citizens and located in Gyeonggi-do province. To develop healthy city for Seongnam, a baseline planning project was conducted. Vision, goals and strategies for the healthy city was developed.

Methods/Statistical analysis: We used qualitative and quantitative methods for the development of the vision, goals, objectives, and strategies through literature review, analysis of the needs of the citizens, FGIs, and discussions. To compare health status of Seongnam citizens to Gyeonggi-do residents, relative ratios of the health status and health practices were calculated of Seongnam setting the index of Gyeonggi-do equal to 1. To find the priorities of the need of the citizens, means, and standard deviations were estimated and correlation analysis was conducted.

Findings: Health status and health practices were better in most of the dong (administrative district) in Bundang-gu, but worse in many dong in Sujeong-gu and Jungwon-gu than Gyeonggi-do. Citizens chose most of the physical environment issues as high priority. All the correlation coefficients were high (0.76~0.954) and significant ($p < 0.01$) among the recognitions on size of the target population and importance of each program. The developed vision was "Healthy City where every citizens are happy and equal". For the

achievement of the vision, we developed four goals, establishment of governance system, reduction of health inequality, promotion of mental health, and strengthening capabilities of the citizens.

Strategies to achieve the goals were developed, health in all policies, participation of the community, collaboration of the related departments, and development of success model of healthy city through selection and concentration. We developed various programs for healthy city Seongnam.

Improvements/Applications: This basic plan need to be reviewed further by diverse related parties. Then the programs can be applied in the administration of local governments. Programs contributing to health of the citizens extend beyond health care programs. This healthy city programs can contribute to the improvement of health of the citizens effectively.

Key Words : Healthy City, Vision, Goals, Strategies, Seongnam

1 Introduction

Healthy city is based on the understanding that the health is determined by social, cultural, economic, environmental and ultimately political context[1]. Healthy city project of Seongnam intended to achieve equal society concerning physical, mental, and social wellbeing of the citizens[2,3]. Seongnam City, located in the south of Gangnam, Seoul has 972,623 population in 2017[4]. There is a disparity between the old town and the new town in Seongnam. The old town has two administrative districts(gu), Sujeong-gu and Jungwon-gu. The new town has one gu, Bundang-gu. The population of Sujeong-gu is 237,660, Jungwon-gu is 232,396, and Bundang-gu is 502,567 each in 2017[4]. The social, economic, and health status of the residents in the new town is better but the status of the residents in the old town is lower than the average of the Gyeonggi-do province in which Seongnam is located[5,6]. Standardized mortality per 100,000 people of Seongnam(309.5) was better than Gyeonggi-do(321.8) in 2017[4]. However, the mortality rates of Sujeong-gu(366.1) and Jungwon-gu(383.1) were worse than Gyeonggi-do. The mortality rate of Bundang-gu(241.7) was better

than Gyeonggido.

Healthy city project for Seongnam was designed in 2017[7]. One of the reasons to conduct healthy city project in Seongnam is to reduce the gap between the old and new towns. The priority for the promotion of health status of Seongnam is to improve social and physical environments and other important health related factors in Sujeong-gu and Jungwon-gu and mostly social factors in Bundang-gu. The current paper is the abstract of the baseline planning project report for Healthy City Seongnam conducted in 2017.

2 Research Methods

We analyzed quantitative and qualitative materials. Structured questionnaire was developed to find priorities of the need of the citizens. Vision of the healthy city Seongnam was developed by extracting the most desirable future of Seongnam through the review of the materials and data and discussions of the professionals. Cognitions of the citizens on the coverage and importance of the diverse projects were compared whether they are significantly different or not by t-test. Relative indices were developed to compare health status of the citizens of Seongnam and the residents of Gyeonggido by sex and regional groups. We adjusted health status of Gyeonggido equal to 1, then we compared mortality rates and other health indices. Relative indices were calculated by dividing (100-% of mortality rate of Seongnam) into (100-% of mortality rate of Gyeonggido). Relative score of less than 1 means the mortality rate(or other health indices) of Seongnam is higher than Gyeonggido (worse health). Relative index is equal to 1 when the mortality rate of Seongnam is equal to Gyeonggido. Relative index is greater than 1 when the mortality rate of Seongnam is smaller than Gyeonggido (better health). For the practices good for health, we calculated by dividing (health index of Seongnam) into (health index of Gyeonggido). In addition, we reviewed literatures and diverse health, social, economic, physical environmenta, and other related statistics of Seongnam. Further more, we asked consultations from many professionals in diverse areas, urban planning, design, public administration, statistics, literature, child education, and so on.

3 Results and Discussions

3.3 Health status of the citizens of Seongnam

Mortality rates by all causes of both sexes of males and females were higher in Seongnam than Gyeonggidoin 2016 (Fig. 1)[4]. Mortality rates were higher in males and females of Sujeong-gu and Jungwon-gu than Gyeonggido. However, mortality rates of all causes of Bundang-gu were lower than Gyeonggido. This trend was consistent in all the mortalities by causes.

Mortality rates by neoplasm was higher in Sujeong-gu and Jungwon-gu than Bundang-gu (Fig. 2). Mortality rates by circulatory diseases were lower in all the groups in Seongnam except male of Jungwon-gu than Gyeonggido (Fig. 3). Mortality rates by other causes than diseases were higher in male of Sujeong-gu and Jungwon-gu than Gyeonggido (Fig. 4). Mortality rates by respiratory diseases were higher in male and female of Sujeong-gu than Gyeonggido (Fig. 5).

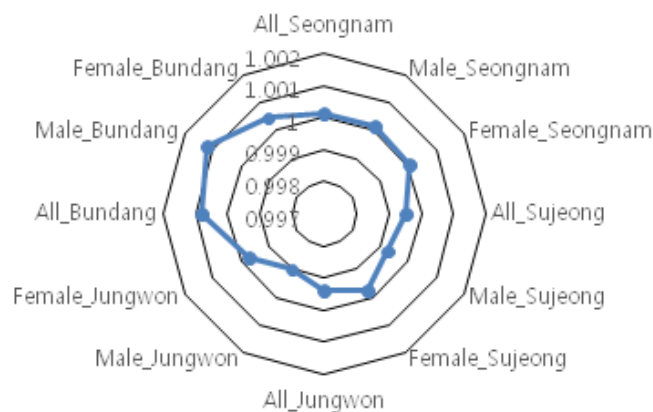


Figure 1: Relative death rate by all causes of deaths

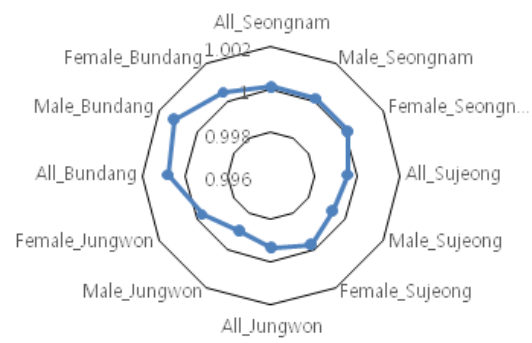


Figure 2: Relative death rate by neoplasm

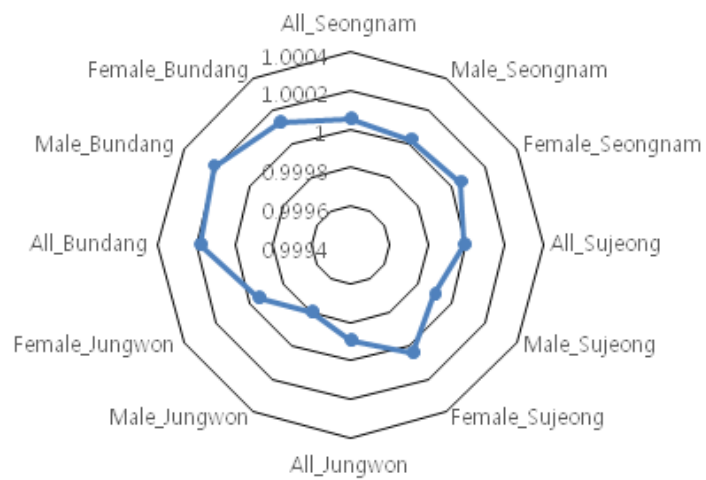


Figure 3: Relative death rate by circulatory diseases

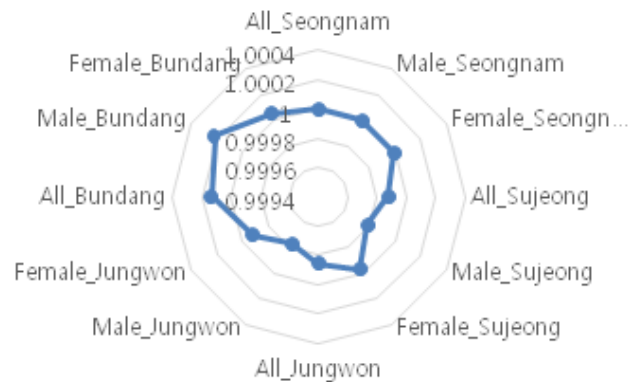


Figure 4: Relative death rate by other causes

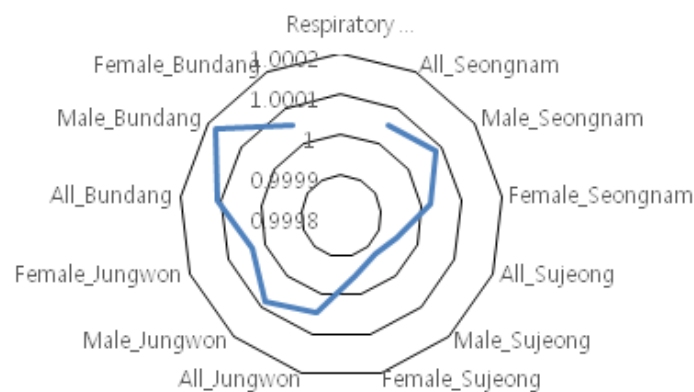


Figure 5: Relative death rate by respiratory diseases

3.4 Health practice of the citizens of Seongnam

Health practices varied among small areas, dong (administrative district). We compared crude smoking rates of males of each dong with the smoking rate of Gyeonggi-do. We used the indices calculated in the 2016 Health Interview Survey [8]. Relative ratios were estimated dividing (100-crude smoking rate of dong of Seongnam) into (100-smoking rate of Gyeonggi-do). The relative index of smok-

ing rate would be 1 if the smoking rate of one dong of Seongnam was equal to the smoking rate of Gyeonggido. It would be less than 1 if smoking rate of one dong of Seongnam was higher than Gyeonggido. And it would be larger than 1 when smoking rate of one dong of Seongnam was lower than Gyeonggido. Smoking rates of males were lower in the dongs of Bundang-gu, but they were higher in the most dongs in Sujeong-gu and two dongs of Jungwon-gu than Gyeonggido (Fig. 6). We did not describe the smoking rate of female because it was very low in Seongnam.

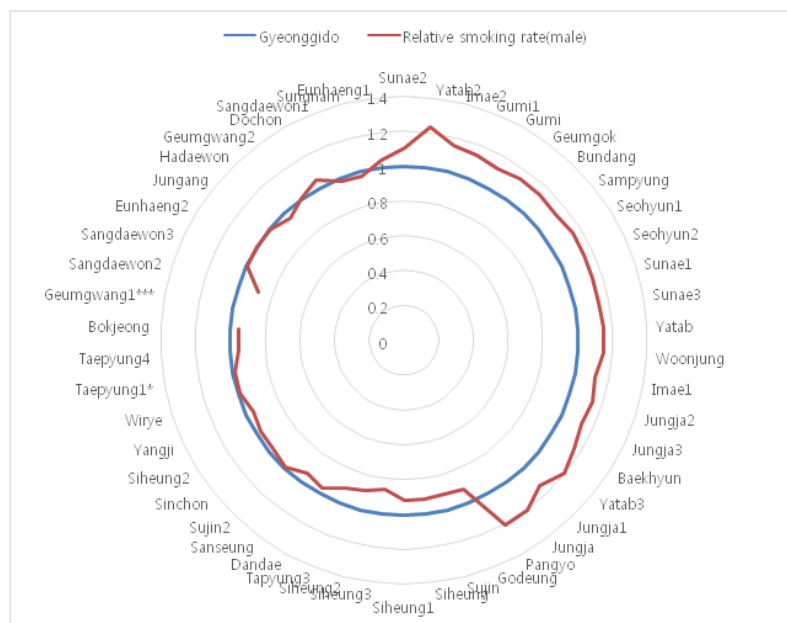


Figure 6: Relative smoking rate(male) (2016 Community Health Survey)

All the dongs of Sujeong-gu and most of the dongs of Jungwon-gu showed higher high-risk-alcohol drinking than Gyeonggidoin 2016 (Fig. 7). However, all the dongs of Bundang-gu showed lower high-risk alcohol drinking practice than Gyeonggido.

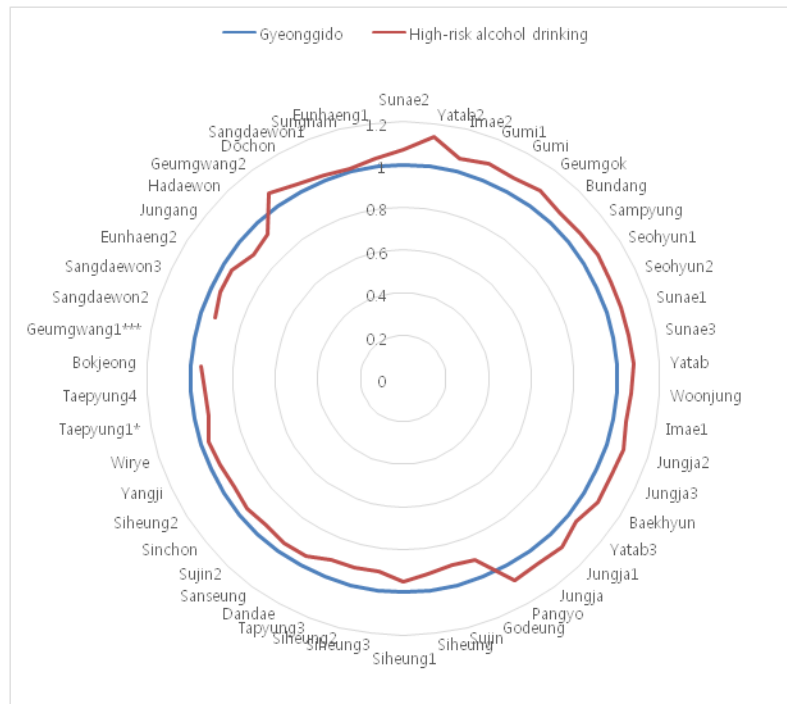


Figure 7: Relative high-risk alcohol drinking (2016 Community Health Survey)

Relative indices of intermediate or higher degree of physical activities were estimated dividing (practice rate of intermediate or higher degree of physical activities of dong of Seongnam) into (practice rate of intermediate or higher degree of physical activities of Gyeonggido). The relative index of intermediate or higher degree of physical activities would be 1 if the intermediate or higher degree of physical activities of one dong of Seongnam was equal to the intermediate or higher degree of physical activities of Gyeonggido. It would be less than 1 if intermediate or higher degree of physical activities of one dong of Seongnam was lower than Gyeonggido. And it would be larger than 1 when intermediate or higher degree of physical activities of one dong of Seongnam was higher than Gyeonggido. All the dong of Jungwon-gu showed lower practice rate of intermediate or higher degree of physical activities than

Gyeonggido (Fig. 8). Practice rates of intermediate or higher degree of physical activities were lower in most of the donges of Bundang-gu than Gyeonggido. Only 3 donges, Sunae-dong, Yatab2-dong, and Imae-dong in Bundang-gushowed higher practice rate of intermediate or higher degree of physical activities than Gyeonggido. Most of the donges of Sujeong-gu were better in practice of intermediate or higher degree of physical activities than Gyeonggido.

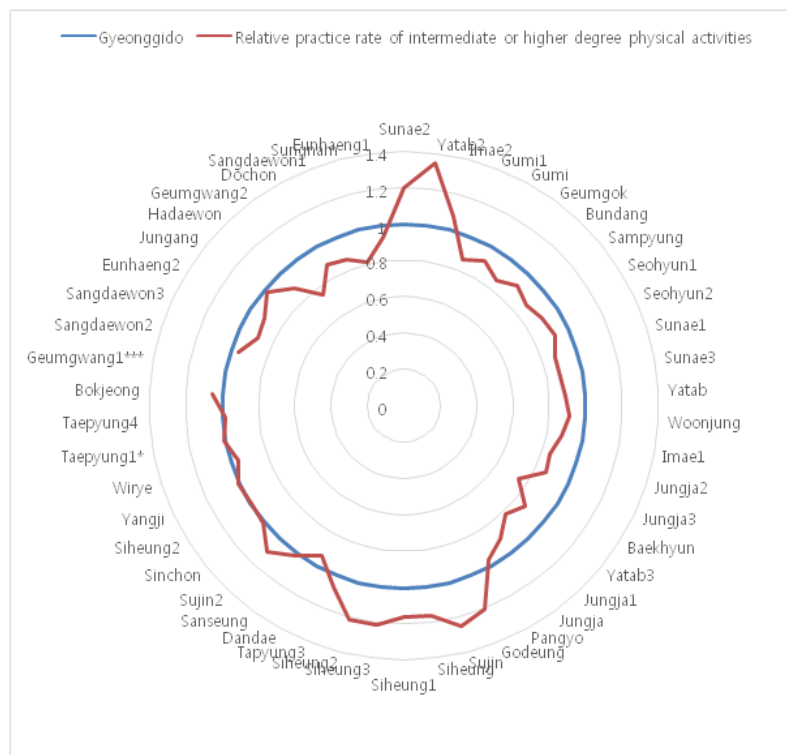


Figure 8: Relative practice rate of intermediate or higher degree physical activities (2016 Community Health Survey)

Residents living in the donges of Jungwon-gu and Bundang-gu wheremany companies are located showed higher perception of stress than Gyeonggido (Fig 9). Most of the residents of the donges in Sujeong-gu reported higher stress than the residents of Gyeong-

gido.

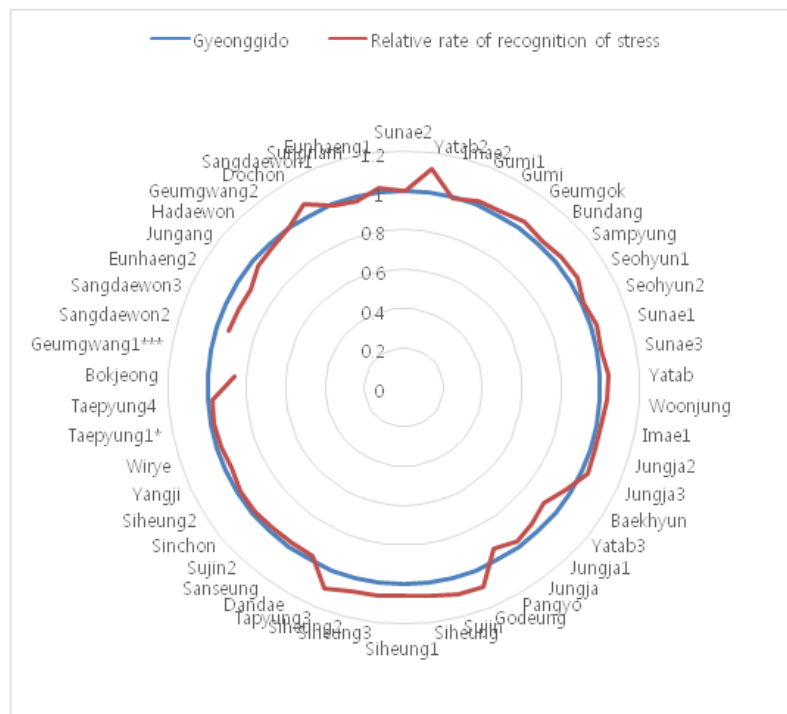


Figure 9: Relative rate of recognition of stress (2016 Community Health Survey)

Proportions of people diagnosed as diabetes among 30 or older were higher in 6 dongs each in Jungwon-gu and Sujeong-gu than the residents of Gyeonggi-do (Fig. 10). Only two dongs of Bundang-gu reported higher rate of diabetes diagnosis rate than the residents of Gyeonggi-do.

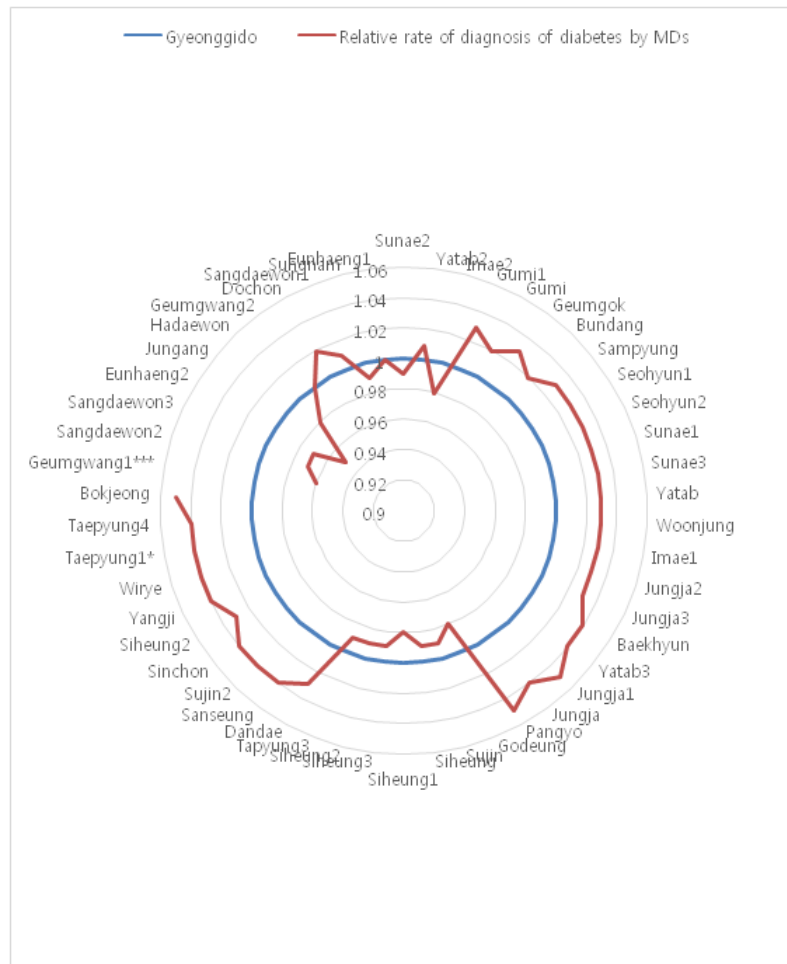


Figure 10: Relative rate of diagnosis of diabetes by MDs (2016 Community Health Survey)

Proportions of the citizens who evaluated himself/herself in good health were lower in all the dong of Sujeong-gu except Bokjeong-dong(Fig. 11). Residents of the five dong of Jungwon-gu reported they were in worse health status than the residents of Gyeonggi-do.

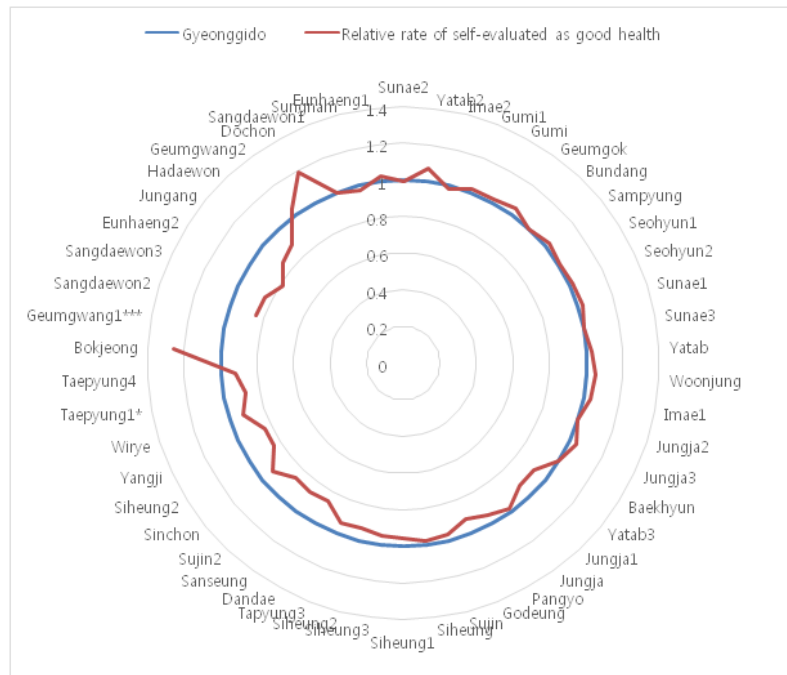


Figure 11: Relative rate of self-evaluation of good health (2016 Community Health Survey)

3.5 Survey on the priority of the programs

A survey was conducted to find the opinions of the citizens on diverse programs for healthy city. We developed a structured questionnaire and processed review of IRB from Gachon University. After the IRB approval, we distributed questionnaires to 1,200 citizens, visitors of health centers, and civil servants in Seongnam. Respondents answered the questionnaires by oneself after listened explanations on how to fill up the questionnaires.

The survey was conducted from 7 to 20 of June, 2017 in Seongnam. We analyzed data from 920 questionnaires collected.

Mean scores were calculated for each question on the size of the target population and importance of each program for healthy city. Most of the programs for the protection of environment had highest scores. Further more, we estimated correlation coefficients

of the responses on the size of the target population and the importance of each program for healthy city. All the programs were found to have large and significant correlation coefficients from the lowest of 0.76 to the highest of 0.954. It implies that citizens of the Seongnam thought all the programs were related in the size of the target population and importance.

<Table. 1> Correlation between size of target population and importance

Items	Size of Target Pop.(Mean)	Importance (Mean)	Correlation coeff.
Cleaning of ambient air	4.653	4.626	.836 **
Cleaning of water of the streams	4.48	4.48	.895 **
Improvement of waste disposal	4.478	4.47	.861 **
Reduction of wastes	4.46	4.46	.872 **
Improvement of indoor air quality	4.388	4.39	.910 **
Control of noise and management of disputes by noise	4.35	4.34	.914 **
Health care for the children	4.184	4.246	.844 **
Expansion & improvement of public health facilities	4.16	4.147	.927 **
Happy school projects	4.132	4.163	.875 **
Health coordinator project for the elderly & the disabled	4.039	4.103	.858 **
Health care project with the Seongnam Medical Center	4.03	4.05	.917 **
Expansion of parks & green roads	4.021	3.99	.945 **
Promotion of mental health	3.977	3.991	.910 **
Safe and healthy food project	3.962	3.941	.954 **
Expansion of roads for walk & biking	3.958	3.899	.867 **

Health care & education for the out-of-school youths	3.943	3.971	.902 **
Provision of health assisted houses & health group homes	3.9	3.93	.904 **
Expansion of stress free zones	3.772	3.75	.923 **
Dedicated department for healthy city	3.71	3.697	.937 **
Expansion of playgrounds and facilities for exercise	3.7	3.66	.920 **
Construction of underground roads in School Zones	3.653	3.652	.922 **
Activation of public performances & exhibitions	3.614	3.596	.836 **
Road diets	3.61	3.58	.947 **
Encouragement of leisure	3.571	3.6	.768 **
Installation of sports equipment in public places	3.38	3.33	.920 **
Installation of moving works	3.173	3.17	.925 **

** p<0.01

3.6 Vision, goals, strategies, and programs

Vision, goals, strategies and programs for the healthy city Seongnam were developed with the review of the statistics on the mortality, health practices, analysis of the survey on priorities of healthy city programs, and discussions of the research team. We concluded equality and happiness are the desires of the citizens of Seongnam. The vision of healthy city Seongnam was "Healthy City of every citizens are happy and equal". Because equality in health and socio-economic conditions among the areas of Seongnam was low and the most respondents chose equality in health, equality was included in the vision. And happiness would encompass diverse aspects of quality of living including health of the citizens of Seongnam. Enhancement of happiness, equality of the citizens would be the final goals of the healthy city of Seongnam. The goals that can contribute to the achievement of the vision were establishment of governance, reduction of health inequality, promotion of mental

health, strengthening capacity of the citizens, and improvement of the environments.

Establishment of governance system for the healthy city were recommended to draw out collaboration among the organizations of city government and diverse social sectors and coordination among the efforts of the parties [9,10]. A dedicated organization for the healthy city was recommended to be developed. A deliberation committee to promote health in all the policies of Seongnam was also recommended. The chair of the committee could be the mayor. For the fund required to perform the healthy city programs, we recommended to use tobacco cessation tax revenue which was more than US\$54,000,000 in Seongnam in 2016. We suggested establishment of healthy city research center for the development of programs and policies and provision of consultations.

Programs enhancing provision of basic health care for the disadvantaged were developed because some citizens did not use health care services when they were sick. Provision of basic health services for the disadvantaged and strengthening public health care system were suggested for the disadvantaged. Recruitment of public health workers and establishment of health sub-centers were recommended to strengthen the provision of public health services.

Provision of public transportation was recommended to facilitate use of health care services and movement for active life for the elderly and the disadvantaged. It included provision of vehicles designed for the elderly and disabled and amendment of the roads and the stairs for free movement of wheelchairs.

ICT health care technologies were recommended to be applied for the reduction of health inequality. Health of the elderly and the disabled need to be monitored and consultations and services should be provided through technological applications and devices. More than 40% of the elderly live alone or with only one family member. They need help for living and health from professionals or neighbors in the supportive houses. Dongs with high proportion of low income elderly showed high mortality in figures 1 to 5.

Meal delivery service was suggested for the increasing elderly residents living alone or with another family member. Provision of supportive houses was suggested for the elderly and the disabled who need care and assistance.

Health information materials need to be prepared in ways easy to understand, because the reading comprehension of the aged 55~66 was low in Korea[11]. Low reading comprehension will lead to inefficient health practices and finally to low health status. Visual materials including infographics were recommended instead of text materials for health programs and information. Many Sino-Koreans and loanwords hard to understand should be replaced with easier words and graphics.

Mental health of the citizens needs to be promoted. Citizens of Seongnam were not very satisfied with their health. Interventions in earlier stages of life are to be provided. Systematic health care for the infants, children, and mothers was suggested. Leave of work need to be encouraged for the mothers delivered and caring babies. Mobile care for the mothers and babies were suggested. Prevention and treatment interventions should be prepared for the internet game addicts. Internet game addiction of the young age group causes various social and health problems. Shut-down and slow-down of the games need to be mandated for the young users. Effective prevention programs for dementia need to be developed and provided. They are provision of education, healthy foods, physical activities, and early diagnosis of cognitive dysfunction for the seniors.

Students are busy in studying and employees are working hard in Seongnam. They need more rest and care. Improvements of social and physical environments for the promotion of mental health were also suggested. Extension of lunch time in the schools could encourage the students more practice of exercises. Recreation activity programs were suggested to be provided for the students. They could increase physical activities of the students who lack physical activities. Programs that can reduce stress of the students need to be provided. Stress-free zones were recommended for the control of stress for the students.

Other diverse programs need to be introduced for the healthy city. Reduction of high school students missing breakfast is important for the health and achievement in learning. Because 1/3 of the high school students miss breakfast before they come to their school. Provision of convenience breakfast need to be served in the high schools primarily.

Strengthening of health education, encouragement of citizen

participation, and collaboration of citizens, local government, businesses, and schools are required for the enhancement of capacities of the citizens.

Improvement of social environment was suggested for the health of the citizens. Communities in which citizens can communicate, support, and collaborate need to be restored. Social relationships should be strengthened in various societies. Rest and leave of work need to be encouraged in the companies. Care farms need to be established for the citizens with dementia and depression and school dissenters, etc. Counseling for prevention of suicide needs to be provided in the clinics and health centers through consultations with primary care physicians. Cyber learning cafe in which students can ask what they could not understand and counselor team answer the questions need to be established to improve effectiveness of learning of the students.

Physical environments were suggested to be improved to protect and improve health of the citizens. Safe and convenient roads for walking and biking need to be established in diverse areas of Seongnam to encourage more physical exercise for the citizens. More physical activities for the children and adults need to be encouraged.

Healthy city festival in which health forum, health campaigns, cooking competition of healthy foods, and demonstration of care farms, and other diverse programs would be held was suggested.

For the effective promotion of healthy city, citizens, government, corporations, and schools need to collaborate together. Campaigns encouraging healthy restaurants selling foods safe and good for health were suggested. Good restaurants and healthy foods were encouraged. Provision of healthy recipes of cookies, breads, and foods was suggested.

Specialization of villages was suggested. Remodeling the crime-prone areas into bright and attractive areas, such as outdoor stages and pleasing designs, was recommended. Reconstruction of huge complex building in the old town was suggested to solve the obstacles in redeveloping old town. Old town has old and lagged houses, few parks and parking lots, and narrow roads. Construction of huge complex buildings can encompass large shopping malls, offices, parking lots, parks, and residences in the old town. It may

revitalize health and life of the citizens in the old town.

Co-housing where many single elderly live together needs to be constructed. They can cook, dine, and socialize together and help each other. Nursing homes in which elderly and college students living are needed to be constructed. College students can serve elderly by teaching how to use digital devices and helping them in various areas of living. Discount of rent fees could be applied for the college students in proportion to the time they served the elderly.

Physical environments of the city need to be improved. Quality of drinking water, indoor and ambient air, bad smells, and noise need to be monitored and controlled. Covered streams should be restored into natural streams. It could revitalize the stores around the streams and provide rest and physical activities for the citizens.

Infrastructures for healthy city need to be constructed. Universal design should be developed and applied for the convenience and safety of the elderly and the disabled citizens. Health friendly constructions need to be introduced primarily in the public buildings to reduce exposure to harmful indoor air pollutants. Old overpasses should be transformed into trails for the promotion of walking and exercise of the citizens.

More play grounds which can encourage creativity were recommended to be established. City should contribute to building sound culture for the elderly sex. Sex education and sound meetings need to be provided for the elderly.

Strategies to achieve the goals were developed. They were health in all the policies, participation of all the social participants, collaboration of every organization in the city government, and development of success model through selection and concentration. We need to consider all the policies in relation with health of the citizens. It is not effective to improve health status of the citizens with the current vertical projects which consider the projects not in the health perspectives but in the mission of each department.



Figure 12: Vision, goals, and strategies for Healthy City Seongnam

4 Conclusion

The keys for the success of the healthy city project in Seongnam are the concern of the mayor and the proactive participation of the citizens. The important problem of Seongnam is an inequality in social, economic and health status in the old town and the new town. All the policies of Seongnam need to be evaluated in the perspectives of health of the citizens. Health impact analysis will be required in the policies and big projects for developments.

Citizens of Seongnam are very busy in studying and working for the competition is high in the society. Rests need to be recommended with high priority for the students and the citizens.

We need to develop programs to improve social environment to encourage community spirit and trust among people. Recognition on healthy city and capabilities to contribute for healthy city of the citizens needs to be improved. Health educations were suggested to be prepared and provided for the diverse groups of the citizens. Various campaigns were recommended to enhance recognition of the citizens and change the social environments. Programs in which all the parties of Seongnam are participating need to be developed, such as healthy restaurants and good stores campaigns.

Healthy construction need to be introduced in the public constructions primarily to protect safety and health of the citizens.

Universal design good for the elderly and children is needed to be developed. Air quality of the indoor and outdoor should be monitored for the citizens to avoid harmful health effect from the fine dusts, VOCs, radon and other air pollutants.

References

- [1] Tsouros A.D. (2015). Twenty-seven years of the WHO European Healthy Cities movement: a sustainable movement for change and innovation at the local level. *Health Promotion International*, 30(s1), i3-i7. doi: 10.1093/heapro/dav046
- [2] WHO Regional Office for the Western Pacific. (2000). *Regional Guidelines for Developing a Healthy Cities Project*. Retrieved from http://www.wpro.who.int/health_promotion/documents/regional_guidelines_for_developing_a_healthy_cities_project.PDF
- [3] World Health Organization. Regional Office for the Western Pacific. (2015). Healthy cities : good health is good politics : toolkit for local governments to support healthy urban development. Retrieved from <http://iris.wpro.who.int/handle/10665.1/11865>
- [4] KOSIS. (2017.11.21). Retrieved from http://kosis.kr/statisticsList/statisticsList_01List.jsp?vwcd=MT_ZTITLE&parentId=I#SubCont.
- [5] Seongnam. (2015). *2015 Major Statistics of Seongnam*. Retrieved from http://stat.seongnam.go.kr/eBook/2016_data/pe/viewer_frame.html
- [6] Seongnam, Seongnam Industry Promotion Agency. (2016). *2016 Survey of Economic Indicators of Seongnam*.
- [7] Lee, WJ., Jang, JS., Choi, GI., Go, YM. (2017). *Baseline Planning Project for Healthy City Seongnam*. (in Korean)
- [8] KCDC. (2016). 2016 Community Health Survey

- [9] WHO, The WHO Center for Health Development, Kobe. (2011). Intersectoral Action on Health. **Retrieved from** http://www.who.int/kobe_centre/publications/intersectorial_action_health2011/en/
- [10] Choi, J., Kim, Y., Ryu S. (2014). *A Study of Influence Factors for Governance System of Healthy Cities Environment*. Residential Environment Institute of Korea, 12(2), 199-209.
- [11] In Soon Jang (2006). *Reading power is a national growth engine*. **Retrieved from** <http://egloos.zum.com/garisan-god/v/3119903>

