Exploring Social Quality and Community Health Outcomes: An Ecological Model

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Background and Objectives

Studies on social quality (SQ) started in 1990 in Europe (Farrell & Demeyer, 2005). The emphasis on the pluralism of welfare, and the individualization of citizenship recognition resulting from the decline of the welfare state and the union of state and market in those studies, has been criticized (Taylor-Gooby, 2006). Globalization and the economic integration of Europe are recognized as changes that could regulate resources and resource levels in social policies that were previously decided by the state (Costanza et al., 2008; Farrell & Demeyer, 2005; Taylor-Gooby, 2006). Studies into SQ are related to, but distinct from ecological studies such as those into social capital (Jung & Viswanath, 2013).

Although social capital has several definitions and interpretations, herein social capital is the expected collective or economic benefits derived from the preferential treatment of individuals or groups and from cooperation between individuals and groups. This integration of individual and group aspects of social capital can be thought of indicative of SQ, which reflects the social and organizational architecture of a community and is a potential asset when addressing community problems (Pierson, 2007; Bonoli, 2007). Although SQ has been shown to predict self-reported well-being positively, that result may be related in part to the role that community-based volunteerism plays in generating and disseminating community resources (Minkler, Wallerstein, & Wilson, 2008). Despite reports on the characteristics of SQ, its components and its effect on community health outcomes have not yet been reported.

Assessment of SQ indicators can be useful when comparing the characteristics of different societies. This is because SQ indicators include those that measure the degree of engagement in social and economic life. Knowledge of such indicators can be used to enhance the well-being of an individual's life opportunities. However, in SQ examinations based on the present paradigm in which an ecological approach is utilized, it is important to understand social empowerment and to determine the effect of the community on an individual's health (Diez-Roux, 2003). This study examined the relationships between institutional and citizen capacities, and the association of those capacities with community-based health outcomes.

Material and Methods

1. Research Design

We designed an ecological model to examine the associations between social quality and community health outcomes using national datasets consisted of 230 local governments. To this end, we developed measures for evaluating SQ in accordance with the level of the respective local community and to find the explaining factors (Kawachi & Subramanian, 2006).

2. Dataset

The data for this study came from a survey of "Social Quality of Local Community in Korea" which was conducted for six months from June to November 2011 by the Seoul Broadcasting System (SBS) in partnership with the Institute for Social Development and Political Research (ISDPR) at Seoul National University. We systematically reviewed a variety of indicators that determine social quality and analyzed the resulting community health outcomes of age-standardized mortality rate and suicide rate. We used two types of community-level indicators which show the unique characteristics of contextual effects. An aggregate indicator refers to the effect of a derived group-level variable on an individual-level outcome. An integral indicator refers to the effect of group-level variables that can apply to any situation involving lower-level units nested within higher-level units (Diez-Roux, 2003).

3. Measures

According to the previous study, we systematically collected usable indicators from 230 local governments in South Korea (Jung, 2014).
Dependent variables: We used an integrated item of community-level health outcomes by employing two aggregate variables: the age-standardized mortality rate per 100,000 and suicide rate per 100,000 belong to these indicators.
Independent variables: With respect to the SQ indicators, we categorized them as six domains of two major factors using principal component analyses.
Potential confounders: The potential confounders were population density, ratio of aged population, financial independence, and the Gross Regional Domestic Product (GRDP) per capital. In the appendix are all detailed variables and formulas of SQ indicators.

4. Statistical Analysis

First, descriptive statistics of the SQ index were calculated by cities, towns, and districts. Second, we analyzed correlations of the six SQ indicators and community health outcomes by regional type. Third, ordinary least square regression analyses were conducted to find significant SQ indicators affecting the community health outcome. Fourth, we compared four representative types of the social quality indicators among 230 local governments using radar charts.

Results

1. Effects of social quality indicators on community health outcome by regional type

We conducted regression analysis, which adjusted population density, ratio of aged population, financial independence, and per-capita estimated GRDP, on the determinants of the health outcome of local governments (Table 1). As a result, the health outcome of local government was superior as social welfare, political participation, and education were higher. However, the medical service still showed negative influence even on the regression analysis, and the reason for this result could be the failure to use the medial resource more effectively for the over-density of the population in metropolis as explained previously. Meanwhile, according to the result of the regression analysis based on the regional type, the social welfare influenced the most on the health level of local government both in metropolis and small/medium-sized cities. In addition, education and political participation had a positive effect on the health indicator of local government in metropolis. However, none of the social quality indicators had any meaningful influence in counties. Therefore, small/medium-sized cities need to promote the health of the local government through improving social welfare, and metropolis need to consider the complex relationship among other indicators while increasing the level of social welfare and education. Meanwhile, counties need to develop health indicators which reflect the aged population characteristic and social environment of rural areas.

2. Comparison of radar charts of four representative types of the social quality indicators

We compared the typical examples from different categories among 230 local governments using radar chart (Figure 1). The size of the social quality capacity of each local government was calculated with the area of the graph, and A is 150.6, B is 145.7, C is 70.4, and D is 30.8. The correlation of these values and the value of z-score regarding the social quality value is 0.93, which indicates that this value is directly based on the social quality value itself, and the figure enables estimate the size of each social quality indicator intuitively. Figure A shows the size of social quality indicators of Chongno district, which shows that the medical and culture-based infrastructure are superb since it is located at the very center of Seoul, and human capital is also outstanding while political participation is relatively low. Therefore, the size of social quality capacity is 150 which is top 3% among 230 local governments in Korea, but the health outcome is rather feeble. Figure B is Gyeonggi-do Gwacheon City which is located near Seoul and a planned city where the Unified Government Building is located. The social quality capacity of it is considerable, which nearly similar to that of Chongno district, and it shows one of the top health outcomes based on the superior human capital and high social participation even though the medical service is relatively low due to the lack of general hospitals. Therefore, the mortality rate, suicide rate, and fertility rate might not be determined by the medical resource only, but they could be largely influenced by the significant and balanced community capacity. Meanwhile, figure C is Gyeongsangnam-do Geoje county which is a small/medium-sized city based on heavy chemical industry located near Busan metropolis. The institutional capacity such as education, culture, and medical service is not as superior as metropolis like other cities, but the financial independence rate is high and the social welfare facilities are relatively good so the health outcome is quite outstanding. This is a typical example showing the influence of social welfare on the health status of residents which was demonstrated in the previous regression analysis. Finally, figure D is Gyeongsangbuk-do Yangyang county which is a typical rural area located inland, and where social infrastructure is very weak and the institutional capacity is low as well. The political participation is high but the aging problem is serious so the productivity and financial independence rate are low, which is reflected on the generally low health status of the community. Therefore, the fundamental social welfare benefits need to be guaranteed while improving the social quality capacities in general in order to improve the health status of local governments.
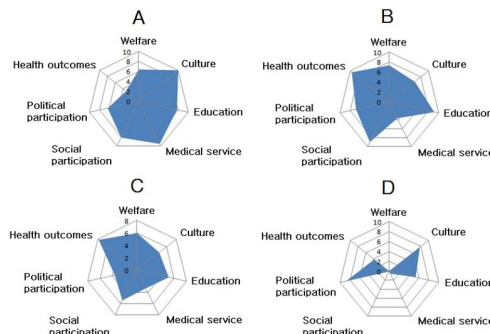

Figure 1. Comparison of radar charts of four representative types of the social quality indicators among 230 local governments

Results (continued)

Table 1. Results of ordinary least square regression analysis of effects of social quality indicators on community health outcome by regional type

	Total	Metropolis	Small/Medium-sized cities	Counties
Constant	2.014 (0.745)**	-2.232 (1.24)	1.813 (1.29)	3.686 (1.535)*
Welfare	0.385 (0.089)***	1.126 (0.182)***	0.587 (0.183)**	0.000 (0.13)
Culture	-0.094 (0.058)	-0.194 (0.065)**	-0.2 (0.134)	-0.055 (0.11)
Education	0.212 (0.082)*	0.361 (0.121)**	0.333 (0.189)	-0.058 (0.157)
Medical Service	-0.158 (0.063)*	-0.209 (0.088)*	-0.158 (0.108)	0.083 (0.154)
Social Participation	-0.002 (0.078)	-0.016 (0.111)	-0.049 (0.14)	0.033 (0.141)
Political Participation	0.264 (0.068)***	0.251 (0.097)*	0.165 (0.133)	0.259 (0.127)*
Model fit statistics				
Adjusted R²	0.147	0.606	0.244	0.009

Note: All models are additionally adjusted for population density, ratio of aged population, financial independence, and the Gross Regional Domestic Product (GRDP) per capital.
* $p < 0.05$.; ** $p < 0.01$.; *** $p < 0.001$.

Appendix. Study sources and formulas of social quality (SQ) indicators

SQ indicators		Formula	Year	Source
Institutional Capacity				
Welfare dimension	Beneficiaries of national basic livelihood per 1,000	(Number of beneficiaries of national basic livelihood/Number of resident registration population)*1,000	2010	MHW
	Percentage of subminimum standard housing conditions	(Number of subminimum standard housing families/Number of household)*100	2005	KRIHS
	Social welfare budget per capita	Social welfare budget in 2010/Local population size in 2009	2010	LFOS
Education dimension	Completion rate of receiving higher education	(Number of residents receiving higher education/Number of residents over 15 years of age)*100	2010	NSO
	Percentage of high school dropouts	(Cases of high school dropouts/Total number of students)*100	2009	EDI
Culture dimension	Cinema per 100,000	Number of cinemas	2010	KFC
	Cultural facilities per 100,000	{(Number of public libraries + number of registered museums + number of registered art galleries)/Population size}*100,000	2010	MCT
	Culture and arts budget	(Budget sum of culture and arts/Estimated expenditures in 2010)*100	2010	LFOS
Medicine dimension	Medical doctors per 1,000	(Number of local registered physicians/Number of resident registration population)*1,000	2010	HIRA
	Number of general hospitals	Number of registered general hospitals by region	2010	HIRA
Citizen Capacity				
Social participation	Community-based non-governmental organizations	Number of registered non-governmental organizations by region	2011	MPAS
	Enrollment rate of community volunteers	(Number of registered volunteers/Population size)*100	2010	LAIIS
Political participation	Voter turnout for the local head of government elections in 2010	Voter turnout for the local head of government elections in 2010	2010	CEMC
	Women's ratio among local assembly candidates	(Women candidates in local assembly election/Total candidates)*100	2010	CEMC
	Number of requests for information disclosure per 10,000	(Cases of requests for information disclosure per 10,000/Number of resident registration population)*10,000	2010	MPAS
Community Health Outcome				
	Age-standardized mortality rate per 100,000	{(Number of deaths/Mid-year population)*100,000}: standardized by age	2009	NSO
	Suicide rate per 100,000	(Number of deaths by self-injury/Mid-year population)*100,000	2009	NSO
Basic information of the local government				
	Area		2008	MLTMA
	Population	Number of resident registration population in 2010	2010	MPAS
	Population density	Number of residents per 1 m²	2010	MPAS
	Ratio of aged population	(Number of residents over the age of 65/Population size)*100	2010	NSO
	Per capita estimated expenditures	[(Local taxes+ non-tax receipts)/Local government budget size]*100	2010	MPAS
		Per capita estimated expenditure in 2010/number of resident registration population in 2009	2010	LFOS

Note: MHW: Ministry of Health and Welfare; KRIHS: Korea Research Institute for Human Settlement; NSO: National Statistical Office
LFOS: Local Finance Open System; EDI: Education Development Institute; KFC: Korean Film Commission; MCT: Ministry of Culture and Tourism; HIRA: Health Insurance Review & Assessment Service;
MPAS: Ministry of Public Administration and Security; LAIIS: Local Administration Integrated Information System; CEMC: Central Election Management Committee; NPA: National Police Agency; MLTMA: Ministry of Land, Transport and Maritime Affairs.

Discussion and Conclusions

The concept of SQ has received public attention because it pursues the concept of holistic harmony in addition to that of physical health, but SQ has yet to be described fully (Beck, van der Maesen, & Walker, 2001). The present study emphasizes the relationship between SQ and health outcomes and presents measures that can be used to overcome previous SQ study limitations. By using a modified SQ framework, we examined regional disparities among 230 local governments in community health outcomes and analyzed the SQ-related disparity determinants. According to the results, first, we established an ecological model based on SQ theory and elucidated the social context of SQ for health parameters. Second, this study made modifications to the integrated models presented in previous social capital studies. Third, this study supports the stipulation of traditional theorists that social support is formed through close ties among individuals and that social integration is produced as a result of the particular values and norms of the community. Distinctions between mature and growing societies in Europe have been studied and such studies are being undertaken in developing countries in Asia. Currently, most studies are at the early stage of developing appropriate SQ indicators (van der Maesen & Walker, 2005; Berman & Phillips, 2000). Eventually, through such studies the collective health status of the community, based on active participation and problem solving by residents at the community level, will reflect the SQ of a community. Capacity building based on residents' participation and social security helps residents to assess various societal problems and to determine the health of their community through the mature awareness and voluntary commitment of the community members. Forming an identity within the community involves not only creating a socio-psychological supportive network for health promotion, but also involves organization of resources for the community and enhances cohesion and solidarity through the actions of various voluntary associations. Consequently, studies into SQ can help the community to achieve improvements in health status if SQ-related works are undertaken by community residents (Walker, 2009; Herrmann, 2005).