예방의학회지 제42권 제5호(2009년 9월)
J Prev Med Public Health 2009;42(5):283-292
DOI: 10.3961/jpmph.2009.42.5.283

Assessment of Community Capacity Building Ability of Health Promotion Workers in Public Health Centers

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Objectives : This study was performed to assess the community capacity building ability of health promotion workers of public health centers and to identify influential factors to the ability.

Methods : The subjects were 43 public officers from 16 public health centers in Busan Metropolitan City. Questionnaire was developed based on 'Community Capacity Building Tool' of Public Health Agency of Canada which consists of 9 feathers. Each feather of capacity was assessed in 4 point rating scale. Univariate analysis by characteristics of subjects and multivariate analysis by multiple regression was done.

Results : The mean score of the 9 features were 2.35. Among the 9 feathers, 'Obtaining resources' scored 3.0 point which was the highest but 'Community structure' scored 2.1 which was the lowest. The mean score of the feathers was relatively lower than that of Canadian data. The significant influential factors affecting community capacity building ability were 'Service length', 'Heath promotion skill level', 'Existence of an executive department', and 'Cooperative partnership for health promotion'. According to the result of multiple linear regression, the 'Existence of an executive department' had significant influence.

Conclusions : Community capacity building ability of subjects showed relatively lower scores in general. Building and activating an executive department and cooperative partnerships for health promotion may be helpful to achieve community capacity building ability.

J Prev Med Public Health 2009;42(5):283-292

Key words : Community capacity, Health promotion, Capacity building

INTRODUCTION

Since the health promotion act was legislated in 1995, the Korean government has enlarged the health promotion initiative. And the health promotion fund has been increasing since 1997 [1]. Despite the quantitative growth, the Korean health promotion initiative has continued to change in title, supporting structure, funding, programs and strategies. Seo et al. [2] and Yoon [3] pointed out that the health promotion initiative has been mainly driven by the public health centers and suffer the lack of experience in planning, promoting and assessing the community based health promotion initiatives due to the short history of local autonomy. In addition, the health promotion workers are rather focused on individual education and insufficient effort is made to build up close partnership with various community stake holders [4].

Considering these problems, a number of approaches have been proposed from many different perspectives, e.g. health promotion contents [5,6], workforce, supporting structure and resources [7,8], evaluation [1,2] and cooperation with partners in the community [3,9,10]. Previous studies were focused on community-based health promotion initiative, for instance, collaboration between private and public sectors, community participation, etc. However, little work has been done on the community capacity of the health promotion work force.

It has been reported that investment to the health promotion work force capacity effectively results in significant health promotion outcome and positive social effects [4,11]. Such capacity of the health promotion workers is represented by their ability to cope with community health problems through cooperation community members and health promotion partners. Although the term is defined differently depending on studies or researches [4,12-18], such capacity is generally called 'community capacity' and efforts have been made to incorporate it in health promotions [11,18-20]. In order to assess the community capacity in a quantitatively, different types of assessment tools have been developed and are in use in Canada [21,22], the USA [23] and Australia [24].

The community capacity represents not only the overall capacity of a community as described above, but the capacity of actors in the community [14]. In fact, the community capacity is built up as each actors develops their ability. Particularly, the health promotion workers play an important role in coordinating interactions between community members and help them to develop their capacity [25,26]. A qualitative assessment on the Korean health

Received : 6 April 2009, Accepted : 28 July 2009
This study was supported by a grant from Kosin University College of Medicine (2008).
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Table 1. Nine feathers of health promotion capacity*

Feathers	Characteristic
1. Participation	Participating in a project means the target population, community members, and other stockholders are involved in project activities, such as making decisions and evaluation.
2. Leadership	Leadership includes developing and nurturing both formal and informal local leaders during a project. Effective leaders support, direct, deal with conflict, acknowledge and encourage community members' voices, share leadership, and facilitate networks to build on community resources.
3. Community structures	Community structures refers to smaller or less formal community groups and committees that foster belonging and give the community a chance to express views and exchange information.
4. External supports: funding bodies	External supports (funding bodies) such as government departments, foundations, and regional health authorities can link communities and external resources.
5. Asking why	Asking why refers to a community process that uncovers the root causes of community health issues and promotes solutions. The community comes together to critically assess the social, political, and economic influences that result in differing health standards and conditions.
6. Obtaining resources	Obtaining resources includes finding time, money (other than from funding bodies), leadership, volunteers, information and facilities both from inside and outside the community.
7. Skills, knowledge, and learning	Skills, knowledge, and learning are qualities in the project team, the target population, and the community that the project team uses and develops.
8. Linking with others	Linking with others refers to linking your project with individuals and organizations. These project links help the community deal with its issues. Examples include creating partnerships or linking with networks and coalitions.
9. Sense of community	Sense of community, within the context of a project, is fostered through building trust with others. Community projects can strengthen a sense of community when people come together to work on shared community problems.

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promotion workers could provide a meaningful attempt to maximize the effect of the health promotion initiative and make it sustainable.

No attempt has been made to redefine the idea of community capacity in the local context and to assess the community capacity building ability of regional health workers. Therefore, a qualitative assessment of the public health promotion workers and the identified influential factors may be used as preliminary data for designing better community capacity building strategies [16,27].

Following the definitions of community capacity specified in Hawe et al. [4], this study is aimed at quantitatively assessing the community capacity building ability of the public health promotion workers using modified Community Capacity Building Tool [21] and investigating the important influential factors affecting the capacity.

SUBJECTS AND METHODS

I. Subject Selection and Methods

The target population of this study was defined as all health promotion workers of 16 public health centers across Busan metropolitan city. A total of 50 subjects qualified and were convened for a one day workshop, where they were asked to complete the provided questionnaires. Analysis was to be carried out with the submitted questionnaire. 46 out of 50 subjects (attendance rate 92%) were present at the workshop, and 44 questionnaires were collected. 43 papers (collection rate 86%) were analysed.

The workshop was organized by the department of health promotion of Busan metropolitan city council and held on July 10, 2008 based on 'Adult Learning Methods' [28]. A detailed and complete definition of each category for the community capacity building ability was introduced to the participants so that they understand the given categories, and then papers were written in by them. The respondents were well advised about the instructions since the question papers were distributed upon registration.

II. Development of Assessment Tool

Literature review and web searching were performed to collect information and data with respect to assessment tools for community building ability. Of the discovered assessment tools, only the tools completely developed and being in use were taken into consideration and finally 'community capacity building tool (CCBT)' [21] published by the public health agency of Canada was chosen for this study.

CCBT defines 9 feathers for community capacity building, i.e. 'participation', 'leadership', 'community structure', 'external supports', 'asking why', 'obtaining resources', 'skills, knowledge and learning', 'linking with others', and 'sense of community' (Table 1), each of which consists of 1 to 4 questions. The CCBT assessment questionnaire was translated into Korean and then modified to suit the local context after a series of discussions. The questions and terms used in the draft questionnaire was reviewed and validated by the review committee, a group of public health workers and specialists (including 1 head of a public health center, 1 public health worker, 1 official, 2 professors and 1 research associate). The first preliminary survey was performed with a group of public health workers (45 respondents) across 54 public health centers involved in health promotion and healthy city campaigns using the revised questionnaire. The identical questionnaires were sent to the same respondents who participated in the first preliminary survey in 6 months as a part of the second preliminary survey (18 out of 45 responded, 40.0%). In order to assess the reliability of the first and second preliminary surveys, correlation analysis, paired t test and Wilcoxon signed rank test were performed. The highest correlation coefficient was found in 'participation' (0.82) and other feathers also reached more than 0.5 except for 'community structure' (0.46) and 'obtaining resources' (0.32). The paired t-test and Wilcoxon signed rank test have shown that there is no significant difference ($p=0.029$) between the two tests across all assessment feathers other than 'asking why' at $p=0.05$. Cronbach's alpha value was derived per each feather using the same samples in order to find out that the sum

of the scores of all assessment feathers may be used as an index. It turned out that all 9 feathers are consistent with each other at more than 0.6 (Table 2).

For demographic and occupational factors of the subjects, sex, age, education, job position, speciality, job commitment and service length in the health promotion initiative were investigated. The service length in the health promotion initiative includes not only current but previous experiences in the health promotion initiative, counted in month. The job commitment was evaluated as a score on average over 3 new questions using a 4-point scale (Cronbach's α=0.72). Other factors likely to affect community capacity building were divided into two categories; individual and environmental factors. Following Donchin et al. [29], health promotion knowledge level, health promotion skill level, community interest level, community activity level were assessed as individual aspects. The health promotion knowledge level and health promotion skill level were self-evaluated using one question rated from 1 to 4 (1="very low", 4="very high"). The community interest level and the community activity level were also self-evaluated as a score on average using three questions in a 4-point scale (1="very low", 4="very high") (Cronbach's α=0.81, 0.76). Prairie region health promotion centre's tool [22] was used for environmental factors presence of ordinance for health promotion, presence of executive department for health promotion and presence of cooperative partnership for the health promotion (Appendix 1).

Table 2. Results of validity and reliability test for community capacity building tool

Community capacity	Item no.	α	Test-retest reliability	
			Correlation	Paired t-test Mean difference (p)
Participation	4	0.928	0.82	0.37 (0.709)
Leadership	3	0.924	0.56	-0.31 (0.755)
Community structures	3	0.924	0.46	-0.72 (0.477)
External supports: funding bodies	4	0.926	0.72	-0.76 (0.454)
Asking why	3	0.929	0.64	-2.37 (0.029)
Obtaining resources	2	0.925	0.32	-1.26 (0.222)
Skills, knowledge and learning	2	0.931	0.50	-0.83 (0.415)
Linking with others	4	0.922	0.62	-1.07 (0.296)
Sense of community	1	-	0.51	-1.31 (0.206)

Table 3. Distribution and rate of subjects by demographic & occupational, individual and environmental factors

Variable (n)	Category	No. respondents (%)
Demographic and occupational factors		
Sex (43)	Male	6 (11.4)
	Female	37 (88.6)
Age group (43)	20~29	4 (9.1)
	30~39	15 (36.4)
	40~49	11 (25.0)
	50~59	13 (29.5)
Speciality (43)	Nursing	25 (58.2)
	Public health	8 (18.6)
	Medical	2 (4.6)
	Administration	8 (18.6)
Service length, months (43)	-< 12	15 (34.9)
	12 ≦ -< 24	10 (23.2)
	24 ≦ -	18 (41.9)
Job commitment (37)	Low*	20 (54.0)
	High†	17 (46.0)
Individual factors		
Health promotion knowledge level (43)*	Low*	25 (58.1)
	High†	18 (41.9)
Health promotion Skill level (43)*	Low*	36 (84.1)
	High†	7 (15.9)
Community interest level (37)*	Low*	7 (18.9)
	High†	30 (81.1)
Community activity level (37)*	Low*	10 (27.0)
	High†	27 (73.0)
Environmental factors		
Presence of executive department for health promotion (43)	No	9 (20.9)
	Yes	34 (79.1)
Presence of cooperative partnership for health promotion (43)	No	20 (46.5)
	Yes	23 (53.5)
Presence of ordinance for health promotion (43)	No	17 (39.5)
	Yes	26 (60.5)

Job satisfaction (summated mean score of 3 related questions to satisfaction for health promotion initiatives in which subject had participated); knowledge & skill level (knowledge and skills about health promotion which scored in 4 point rating scale); interest level (summated mean score of 3 related questions to interest for community which subject had individually); activity level (summated mean score of 3 related questions to voluntary activity for community in which subject had participated).
* mean score<2 in 4 point rating scale, † mean score ≧2 in 4 point rating scale

III. Statistical Analysis

Frequency analysis was performed on the demographic, occupational, individual and environmental factors to find out the distribution. Each of the 9 feathers of community capacity building ability was evaluated as mean value and standard deviation, and the global mean and standard deviation were also determined across the mean values and standard deviations. The effects of the subjects' demographic, occupational, individual and environmental factors on the community capacity were tested using t-test and analysis of variance (ANOVA). Multiple regression test was used to evaluate the effects of the factors above on the community capacity building ability. The normality of each continuous variable was tested to make sure that the hypothesis for regression test is satisfied, and the distribution was identified using 'Stem and Leaf plot'. Then Shapiro-Wilk test was performed to determine the W values and the corresponding p-values. The distributions of 'obtaining resources' (W=0.861, p=0.00) and 'linking with others' (W=0.874, p=0.00) were found to be non-normal, and all other independent variables such as 'age', 'service length', etc and dependent variables show normal

Table 4. F or t-values of the total capacity, capacity 3 and 6 by demographic & occupational, individual and environmental factors

Variables	Category	Total capacity		Capacity 6: Obtaining resources		Capacity 3: Community structure	
		Mean (SD)	F or T¶	Mean (SD)	F or T¶	Mean (SD)	F or T¶
Demographic and occupational factors							
Sex	Male	2.06 (0.62)	-1.23	2.50 (1.00)	-1.25	1.77 (0.65)	-0.93
	Female	2.45 (0.72)		3.04 (0.97)		2.09 (0.79)	
Age	20-29	2.29 (0.77)	0.94	2.12 (1.54)	1.29	2.33 (0.81)	0.47
	30-39	2.42 (0.70)		3.16 (0.81)		1.88 (0.79)	
	40-49	2.47 (0.73)		3.09 (0.80)		2.18 (0.67)	
	50-	2.34 (0.78)		2.88 (1.08)		2.05 (0.88)	
Speciality	Nursing	2.57 (0.79)	1.41	3.16 (0.82)	0.87	2.14 (0.89)	1.37
	Pub.health	2.31 (0.41)		2.75 (1.25)		2.29 (0.45)	
	Medic.skill	2.06 (0.39)		3.00 (0.00)		1.66 (0.47)	
	Admin.	2.02 (0.68)		2.56 (1.23)		1.62 (0.57)	
Service length (mon)	-< 12	1.94 (0.70)	7.30†	2.53 (1.09)	2.73	1.53 (0.61)	7.08†
	12 ≦-< 24	2.36 (0.54)		3.00 (0.70)		2.16 (0.65)	
	24 ≤-	2.79 (0.61)		3.30 (0.92)		2.42 (0.75)	
Job commitment	Low§	2.35 (0.76)	0.02	3.00 (1.00)	0.19	1.96 (0.77)	-0.34
	High‖	2.35 (0.70)		2.94 (0.82)		2.05 (0.85)	
Individual factors							
Health promotion skill level	Low§	2.29 (0.69)	-2.14*	2.86 (1.03)	-2.76*	1.94 (0.74)	-2.18*
	High‖	2.91 (0.69)		3.50 (0.40)		2.61 (0.73)	
Health promotion knowledge level	Low§	2.22 (0.72)	-1.91	2.76 (1.11)	-1.77	1.86 (0.78)	-1.91
	High‖	2.63 (0.66)		3.25 (0.69)		2.31 (0.71)	
Community interest level	Low§	2.14 (0.75)	-0.83	2.85 (1.02)	-0.37	1.81 (0.69)	-0.82
	High‖	2.40 (0.72)		3.00 (0.90)		2.06 (0.82)	
Community activity level	Low§	2.23 (0.67)	-0.64	2.90 (0.97)	-0.29	1.77 (0.59)	-1.12
	High‖	2.40 (0.75)		3.00 (0.90)		2.10 (0.86)	
Environmental factors							
Presence of executive department	No	1.89 (0.49)	-2.47*	2.44 (0.84)	-1.83	1.70 (0.58)	-1.54
	Yes	2.53 (0.71)		3.10 (0.98)		2.14 (0.80)	
Presence of cooperative partnership	No	1.95 (0.57)	-4.57†	2.65 (1.01)	-2.02*	1.61 (0.62)	-3.99†
	Yes	2.78 (0.60)		3.23 (0.89)		2.43 (0.70)	
Presence of ordinance for health promotion	No	2.51 (0.71)	0.87	3.26 (0.73)	1.64	2.13 (0.85)	0.56
	Yes	2.32 (0.72)		2.76 (1.08)		2.00 (0.74)	

Job satisfaction (summated mean score of 3 related questions to satisfaction for health promotion initiatives in which subject had participated); knowledge & skill level (knowledge and skills about health promotion which scored in 4 point rating scale); interest level (summated mean score of 3 related questions to interest for community which subject had individually); activity level (summated mean score of 3 related questions to voluntary activity for community in which subject had participated).
* $p<0.05$, † $p<0.01$, ‡ $p<0.001$, § mean score<2, ‖ mean score ≧2
¶ F scores of 'Age', 'Speciality', 'Service length' were calculated by oneway ANOVA test and t scores of other variables were calculated by student t-test.

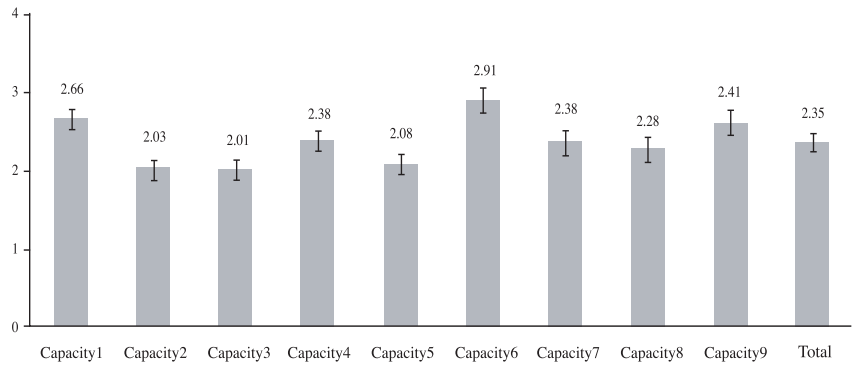

Figure 1. Mean score and standard error of community capacity of subjects.

Capacity 1: participation, Capacity 2: leadership, Capacity 3: community structure, Capacity 4: external support, Capacity 5: asking why, Capacity 6: obtaining resources, Capacity 7: skill . knowledge . learning, Capacity 8: linking with others, Capacity 9: sense of community

distribution. For the regression test, the variables were defined as follows; service length for health promotion initiative "less than 24 months"=0, "24 months or more"=0; speciality "nursing"=0, "others"=1. The levels of professional knowledge and skill, job satisfaction, community interest, community activity were reclassified as follows; "2 or less"=0, "more than 2"=1. SPSS ver. 14.0 (SPSS Inc., Chicago, IL, USA) was used for the test.

RESULTS

The demographic, occupational and individual factors affecting on community capacity are shown in Table 3. Majority of them were female. 15 subjects were aged 30 to 39, which is the most, and the majority of the subjects is involved in nursing jobs. Most of them have served for the health promotion initiative for 24 months or more. Looking at the individual factors, 17 subjects (46.0%) rated their job commitment high. The health promotion knowledge and skill levels were evaluated high by 18 (41.9%) and 7 subjects (15.9%), respectively. 24 (64.9%) and 22 subjects (59.5%)answered their community interest level and community activity level are high. In terms of environmental factor, 34 (79.1%), 26 (60.5%), 23 subjects (53.5%) answered that they have ordinance for health promotion, executive department for health promotion and cooperative partnership for the health promotion, respectively.

Figure 1 shows the mean score and standard deviation of the subjects' community capacity building ability. The score is 2.35 on average over the 9 capacities. 'Obtaining resources' hits the top score of 2.91, followed by 'participation' 2.66. 'Sense of community' is 2.41, 'external supports' and 'skills, knowledge and learning' are 2.38 each and 'linking with others' is 2.28. 'Asking why', 'leadership' and 'sense of community' indicate 2.08, 2.03 and 2.01, respectively. The lowest score 2.00 is seen on 'community structure'.

The mean values and errors were determined across the demographic, occupational, individual and environmental factors. The test results of 'obtaining resources' showing the highest mean value, 'community structure' showing the lowest mean and the overall mean over the 9 feathers are shown in Table 4. Other

Table 5. Multiple regression of selected variables on total capacity

Variables	Model	Model I β	Model II β	Model III β
Demographic, occupational factors	Age§	-0.012	-0.032	-0.018
	Speciality‖	-0.219	-0.262	-0.109
	Service length¶	0.511†	0.421*	0.284
	Job satisfaction**	0.024	0.082	0.038
Individual factors	Health promotion knowledge level**		0.093	0.031
	Health promotion skill level**		0.247	-0.008
	Community interest level **		0.264	0.110
	Community activity level **		0.157	0.054
Environmental factors	Presence of executive department ††			0.529†
	Presence of cooperative partnership ††			0.136
	Presence of ordinance for health promotion ††			-0.091
	Constant	1.410	0.849	0.295
	R^2	0.316	0.475	0.595
	F	3.469*	2.939*	3.069†

Job satisfaction (summated mean score of 3 related questions to satisfaction for health promotion initiatives in which subject had participated); knowledge & skill level (knowledge and skills about health promotion which scored in 4 point rating scale); interest level (summated mean score of 3 related questions to interest for community which subject had individually); activity level (summated mean score of 3 related questions to voluntary activity for community in which subject had participated).
*p<0.05, †p<0.01, ‡p<0.001, §(1) 20-29 (2) 30-39 (3) 40-49 (4) 50-,
‖(1) Nursing (2) Public health (3) Medical (4) Administration, ¶(1) < 24 months (2) 24 months ≦,
**(1) low (2) high, ††(1) no (2) yes

test results are described in the text. No significant difference in mean value was found between the 9 feathers and overall value in terms of sex and age (p>0.05). As for speciality, 'external supports' showed significant difference (p<0.05). Based on service length, all feathers showed significant difference except for 'obtaining resources' and 'linking with others' (p<0.05). No significant difference was found in terms of job commitment (p>0.05). The test on the health promotion knowledge level showed that 'participation', 'community structure', 'obtaining resources' and 'overall mean capacity' have significant difference (p<0.05). No feature showed significant difference depending on the health promotion knowledge level (p>0.05). The test on community interest level showed that 'leadership', 'community structure', 'asking why', 'skills, knowledge and learning' and 'overall mean capacity' have significant difference (p<0.05). No significant difference was found in the test on community activity and presence of ordinance for health promotion (p>0.05). All feathers including the overall mean capacity showed significant difference in the test on presence of partnership for the health promotion initiative (p<0.05). All feathers except 'community structure' and 'skills, knowledge and learning' also showed significant difference in the test on presence of executive department for the health promotion initiative (p<0.05).

Table 5 presents a comparison between the demographic, occupational, individual and environmental factors and the overall mean capacity. The service length showed a positive correlation (β=0.511, p<0.01). When individual factors were added, the statistical significance was sustained, while the standardized coefficient β was reduced and the statistical significance was lost when the environmental factors were integrated. It turned out that the individual factors cannot be used to explain the correlation with community capacity building (p>0.05). Of the environmental factors, 'presence of executive department' showed a positive correlation (p<0.01). 'Obtaining resources' showing the maximum mean value indicates similar results to the overall mean capacity. Although the service length appeared to have a positive correlation (β=0.435, p<0.05), the β value was reduced and statistical significance was lost as the individual and environmental factors were added. It was finally shown that only the presence of executive department for health promotion has a significant correlation (β=0.426, p<0.05). 'Participation', 'leadership', 'external supports', 'linking with others', 'sense of community' showed the similar correlation to the 'obtaining resources'. As for 'community structure' showing the lowest mean value, the service length for the health promotion initiative has significant correlation (β=0.424, p<0.05) and the standardized coefficient β goes down as the individual and environmental factors are added. It was also found the community interest has significant correlation when the individual factors (β=0.339, p<0.05) and environmental factor (β=0.321, p<0.01). 'Asking why' and 'skills, knowledge and learning' have no correlated factor in the individual and environmental factors.

DISCUSSION

The contribution of this study is that the community capacity driving factors are systematically redefined in the local context and the relatively weak capacities of the health promotion workers have been specifically figured out, i.e. 'community structure', 'leadership' and 'asking why', which can be used for improvement to the health promotion initiative.

The CCBT [21] developed by the public health agency of Canada was translated and partly modified for this study. The CCBT has been validated for internal consistency throughout the development stages [19], and the internal consistency and reliability were also found to be high except a couple of capacities in this study. Since any domestic assessment tool has not been developed or used for assessing the community capacity building ability of the local health promotion workers, a widely recognized and validated foreign assessment tool [20] was introduced to this study, which allows an objective comparison with overseas cases. The proposed tool can be used to assess the ability of a variety of local groups, and possibly provides clues to improvement to the domestic health promotion

initiative. Yoo et al. [30] previously proposed 'partnership with community and community activity' as a priority, together with 'acceptance of cultural difference', 'cooperation skill with community', 'leadership', 'open and reasonable thinking' for the assessment. However, the validity of the proposed tool has not been sufficiently justified and further works have to be done using internationally recognized assessment tools.

This study demonstrates that the community capacity building ability of the tested subjects is rated 2.35 out of 4, which is lower than that of the Canadian subjects, 2.86 assessed using the same tool. In comparison with the Canadian survey report, the smallest difference is found in 'obtaining resources', 0.09 point lower than that of Canada. The tested subjects show the biggest deficit in 'leadership', 0.81 lower than that of Canada. Big differences are also seen in 'community structure' (0.61), 'sense of community' (0.60), 'external supports' (0.59), and 'asking why' (0.54). The overall community capacity building ability of the tested subjects appears to be 'just started' and lower than Canadian subjects in every feather [19]. Even if the differences in public health service system, structure, occupational role and authority between Korea and Canada are taken into account [31], the conclusion does not change. Of the 9 feathers of community capacity building, the community activity and cooperation related factors such as 'community structure', 'leadership', and 'asking why' are found to be significantly short and they generally cost more time and resources to improve [19]. This is because the Korean health promotion initiative has been operated for about 10 years, which is a relatively short time, and the public health centers have played as local hubs merely delivering the government's policies and programs [2]. The health promotion initiative has been forced to go using the old government-led framework without constructive investment in training, education and reforming the workforce [6]. In addition to that, the partnership between communities and authorities is not well established because the history of local autonomy is relatively short, and communities are generally excluded throughout the policy making process [3].

Looking at the correlations between the demographic, occupational, individual and environmental factors and the community capacity building ability, a significant positive correlation is observed between the service length and the community capacity building ability. More than half of the subjects served for health promotion for less than 24 months because of the 2-year job rotation system. However, some of the subjects have health promotion experiences more than others after several job rotations and achieved higher ability. As pointed out by Lee [9], frequent job rotation may prevent the workforce from building specialist experience and skills, and therefore the rotation system needs to be optimized and every public health carer should be appropriately trained as a potential health promotion worker. Including environmental factors decreases the standardized coefficient β of the service length and therefore the correlation is no longer significant. This suggests that the environmental factors contribute to removing the difference in the ability arising from the difference in the job experience.

As for the environmental factors, a significantly high overall score is achieved in the presence of a dedicated health promotion department in the public health center. Presence of executive health promotion department is found to be the only factor affecting the overall ability score. The multivariate analysis model demonstrates that the individual and environmental factors affect the overall ability as a higher significance is achieved by adding more individual and environmental factors (R^2=0.674). In addition to the overall score, there appear to be significant correlations between the environmental factors, e.g. 'presence of executive health promotion department' and 'presence of cooperative partnership for health promotion' and some of the 9 feathers; 'obtaining resources', 'participation', 'leadership', 'external supports', 'linking with others', and 'sense of community'.

Donchin et al. [29] and Boonekamp et al. [32] pointed out that it is important to obtain external supports and cooperation with community for health promotion, which is consistent with our findings. This implies that a dedicated health promotion department could preserve useful knowledge and experiences even if the workforce is rotated and operate the health promotion initiative in a persistent way owing to undisrupted service [9]. Since the cooperative partnership in community enables active resource supply to the community [10], the health promotion workers could take more opportunities to expand their scope of work and collaboration. The point is that not only the individual factors, but also the environmental factors should be developed, for example, organizing a dedicated health promotion department and close partnership with community in order to enhance the ability of health promotion workers.

As for occupational role, nursing shows a significantly high mean value in 'external supports' compared to other occupational roles. It is thought that the nurses have more opportunities to build partnerships and associations as they are directly involved in both clinical health care and health promotion. It was assumed that the subjects who have obtained more knowledge and skills for health promotion through trainings such as FMTP would show higher capacity building ability, but in fact no significant difference is observed. This is because most of the subjects are not familiar with the knowledge presented in the assessment questionnaire and therefore rated their knowledge level low. An independent variable should be developed to test the effect of knowledge level in an objective manner.

Higher interest in community issues and causes leads to increased mean values of many feathers of capacity building ability, but the community activity level does not. The activities referred to in this study were mainly general and simple level of participation. Thus, this result could be validated after testing the subjects using appropriate new questions including higher level of participation.

This study is based on the survey with the health promotion workers in Busan area. The response rate was 86%, which is high enough to represent the entire health promotion workers in Busan. However, the sample size only amounts to 6.9% of the target population nationwide, so that it is too premature to reach to generalized results. Even so, this study is an initial attempt to understand the community capacity building ability of health promotion workers and can be used to design a full-scale survey or a future master plan to some extent. Other limitations of this study are the validity and reliability of the assessment tool used in this study. Since the original assessment tool was developed in the context of Canada, the validity of the tool has not been sufficiently justified or supported by systematic preliminary studies. Further works need to be done to add necessary questions and rectify errors. For example, 'asking why' which shows a significant difference in the first and second preliminary surveys has been tested in a couple of previous studies [33], but no definitive model has been proposed therein. Therefore, the subjects may also have found it difficult to figure out the idea.

In terms of test subjects and test validity, the findings of this study cannot be used to represent the global community capacity building ability of the entire community since the health promotion workers, a small part of the community capacity builders, were investigated only. However, the purpose of this study is to assess how well the health promotion workers interact with the communities and derive their participation and partnership. In this context, this study provides meaningful results. From a perspective of new public health, this study provides an extensive assessment on the capacities of communities and health promotion initiative workers and could be used as preliminary data for policy reform and innovation. Further works should be concentrated on assessing and analyzing the capacity of other parties such as authorities, leaders, representative local organizations, health promotion partners, etc.

In conclusion, the survey on the community capacity building ability of 16 public health centers in Busan area suggests that their mean score is relatively low at 2.35 out of 4. It is shown that they are particularly short of 'participation', 'leadership', and 'asking why'. The linear regression test shows that there are significant differences in 'presence of executive department' and 'presence of cooperative partnership' for health promotion, indicating that not only individual commitments but also environmental supports and contribution, for example, dedicated health promotion department and community partners, are required for health promotion. The development of specialists for the health promotion initiative should be included in the local health act as a binding obligation and more resources should be input such that the general community capacity is built up rather than promoting individual education [30]. This study provides preliminary data for such approaches.

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부록 1. 지역사회역량강화 능력평가 설문문항

내 용
일반적 · 업무관련 특성
1. 성별* 2. 연령† 3. 직급‡ 4. 건강증진사업 참여기간§
5. 직업 몰입도:
(1) 건강증진업무에 대해 자부심을 가지고 있는가?‖
(2) 건강증진 업무에 최선을 다하며, 업무상 발생하는 문제를 능동적으로 해결하는가?‖
(3) 건강증진 업무에 대해 충분히 보상(존경과 신뢰, 급여, 명예등)을 받고 있는가?‖
개인적 특성
1. 건강증진사업관련 전문적 지식의 습득정도는 어느 정도인가?¶
2. 건강증진사업관련 전문적 기술의 습득정도는 어느 정도인가?¶
3. 지역사회 관심도:
(1) 지역사회 현안에 대해 관심이 많고, 동료들과 지역의 문제에 대해 이야기하는가?‖
(2) 지역 신문을 구독하고 지역 방송을 시청하는가?‖
(3) 소속 지방자치단체의 주요단체장, 지방의회 의원들의 이름과 기본적인 정보를 아는가?‖
4. 지역사회 활동정도:
(1) 지역 내 봉사활동, 동아리활동, 시민단체 활동 등에 참가하는가?‖
(2) 지역에서 생산되는 농 · 축 · 수산물과 공업제품을 다른 지역 생산물보다 우선 이용하는가?‖
(3) 지방선거 등 지역정치활동에 참가하는가?‖
환경적 특성
1. 소속된 구 · 군 보건소에는 건강증진 업무를 전담하는 조직이 있는가?**
2. 소속된 구 · 군에는 건강증진사업상 협력 기관/단체가 있는가?**
3. 소속된 구 · 군에는 지방의회의 승인을 얻은 건강증진 혹은 관련조례가 있는가?**

* ①남성 ② 여성 †①20~29세 ② 30~39세 ③ 40~49세 ④50~59세

‡① 간호 ② 보건 ③의료기술 ④ 행정

§ ① 12개월 미만 ②12개월 이상~24개월 미만 ③ 24개월 이상

‖①매우 그렇다 ② 그런 편이다 ③ 아닌 편이다 ④ 매우 아니다

¶ ①매우 높다 ②높다 ③낮다 ④매우 낮다

**① 있다 ② 없다

부록 1. 지역사회역량강화 능력평가 설문문항 (계속)

내 용
참여 역량
1. 건강증진사업에 지역사회조직을 적극적으로 참여시켜왔는가?
2. 건강증진사업에 사업대상층의 다양한 집단들을 참여시켜왔는가?
3. 사업대상자들이 사업에 참여하는 것을 방해하는 요인을 극복하기위해 노력해왔는가?
4. 건강증진사업관련 정보를 알리기 위해 다양한 방법을 활용해 왔는가?
리더쉽 역량
6. 건강증진사업팀과 참여하고 있는 지역지도자들의 역할과 책임을 명확하게 규정하였는가?
7. 지역지도자들이 사업팀에게 보고해야 할 내용, 방법을 규정한 보고지침이 있는가?
8. 건강증진사업에 비공식적 지역사회 지도자들이 참여하도록 지원하고 격려하고 있는가?
지역사회 조직역량
10. 건강증진사업에 대한 기존지역사회 조직들과의 연계방법을 연구하고 개발해 왔는가?
11. 건강증진사업 영역에서 지역사회와 함께 지역을 조직화하기 위한 개선점들을 찾아왔는가?
12. 지역사회구성원을 돕고 사업을 지역사회기반으로 하기위한 새로운 조직을 만들었는가?
외부 지원역량
14. 보건소외부의 지원기관으로부터 사업과 관련된 정보를 잘 받는 편인가?
15. 건강증진사업에 필요한 전문적 기술지원을 보건소 외부로부터 잘 받고 있는가?
16. 건강증진사업에 필요한 예산 및 조직운영을 위한 지원을 외부기관에 요청한 적이 있는가?
17. 보건소 외부조직들은 건강증진을 위한 지역사회 활동을 지원하는 편인가?
근본원인 탐색 역량
19. 건강증진사업의 주요목표가 되고 있는 건강문제의 근본원인에 대해 탐구한 적이 있는가?
20. 지역사회건강문제관련 근본원인 탐색과정에 사업대상층의 대표들을 잘 참여시켜왔는가?
21. 지역사회건강문제의 해결책 모색과정에 사업대상자층을 참여시켜왔는가?
자원획득 역량
23. 건강증진사업의 성공을 위해, 필요한 지역사회 내부 자원에 잘 접근하고 있는가?
24. 건강증진사업의 성공을 위해, 필요한 외부자원에 잘 접근하고 있는가?
기술 · 지식 · 학습 역량
26. 건강증진사업의 성공을 위해 기술과 지식을 잘 개발하고 이용해 왔는가?
27. 건강증진사업의 사업대상층과 지역사회 구성원들에게 학습기회를 제공해왔는가?
연계 역량
29. 행정, 교육, 지방의회 등 다양한 분야와 네트워킹을 하여 사업에 대한 지원을 얻는가?
30. 건강증진사업관련 정보를 대상자에게 제공해 연계를 유지 · 확장하기위해 노력하고 있는가?
31. 연계대상들로부터 건강증진사업 관련정보를 잘 제공받고 있는가?
32. 지역사회 건강이슈에 대처하기 위해 연계대상들과 협력적으로 일하고 있는 편인가?
지역사회소속감향상 역량
34. 건강증진사업의 활동들이 지역사회 구성원들이 소속감 향상에 기여하고 있는가?

Note: 모든 질문문항에 대해 ① 이제 막 시작 ② 걸음마 단계 ③ 그럭저럭 ④ 잘하고 있다중 택일하고 기타 주관식 의견을 토론을 통하여 답하도록 구성되어있다.