大分県立看護科学大学第15回看護国際フォーラム

Strategies for promoting and evaluating community care

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Received 27 January 2014

Abstract

In South Korea, public health nurses delivered an innovative program for vulnerable populations nationwide to promote health and self-efficacy. We reviewed and extended recent scholarly literature to provide an overview and evaluation of the strategies for the future direction of community care in South Korea, with a particular focus on home healthcare at the local level. We also reviewed community-based nurse visiting programs and their design and effects. We present a set of propositions that outline the evaluation of the results, issues, dilemmas, and implications of the current Korean program. The home healthcare program reduces healthcare disparities by addressing the social determinants of health that contribute to health outcomes in adults and the elderly. This kind of program uses "upstream" strategies that address issues surrounding quality of life, living conditions, and socioeconomic resources for disadvantaged individuals. Key program components include proactive and comprehensive care to improve the health of vulnerable groups, a focus on helping people to achieve economic sufficiency, and strategies to assist people in providing competent care for community-dwelling individuals. Intervention subjects, when compared to control subjects, demonstrated improvements in self-management of chronic disease, smoking cessation rates, and regular exercise rate. An intervention designed specifically to meet the needs of vulnerable populations with respect to poverty and chronic disease was feasible and beneficial beyond improving health behaviors and health status. Further population-based health impact evaluation is required to identify why and how we should continue or expand such programs. Additionally, practical methods of an interdisciplinary approach and collaborating with community resources are both key to challenging issues present in some communities. We discuss the limitations of the study and possible issues regarding the home healthcare program and conclude with the consideration of several key areas for future research.

Key words
community care, home healthcare, health equity, Korea

1. Introduction

Despite differences between national public health systems, the issue of health inequity, caused by the polarization of wealth, increases in average lifespan, senior populations, and medical expenses, is a problem that confronts each system in a similar way. The average lifespan in Korea was 75.9 years in 2000, 79.1 in 2010 and is expected to increase to 81 years by 2020. The percentage of the population aged over 80 years was 1.0% in 2000, 2.0% in 2010, and is expected to increase by 3.8% in 2020. In contrast to the Organization for Economic Co-operation and Development's (OECD) average 2.0% annual rate of increase since 2000, national medical expenses have increased by 4.7% annually in Korea and disparities in health status according to socioeconomic status have increased by approximately 180% since 1996 (Korean Institute for Health & Social Affairs 2010).

To solve this national health issue, the U.S. Department of Health and Human Services (HHS) began to emphasize population-focused essential public health functions and necessary public services complementary to those functions (U.S. Public Health Service 2008).

Three core functions of public health were suggested by the Institute of Medicine (1988): (a) assessment to regularly and systematically

collect, assemble, analyze, and make available information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems; (b) policy development to serve the public interest in the development of comprehensive public health policies by promoting the use of scientific knowledge in decision making about public health and leading the development of public health policy; and (c) reassurance for constituents that services necessary to achieve agreed upon goals are provided by encouraging the actions of other entities requiring such action through regulation or providing services directly.

Similar contents are suggested as "strategies of public health" in Korea. Under the slogan of "Health Plan 2020," the Korean government announced a national vision and purpose along with a number of public health projects to be accomplished by 2020, following Health Plan (HP) 2010 (Figure 1). The strategy to achieve the goals of HP 2020 was suggested as providing population-focused health services and securing the quality and accessibility of health services. Strategies to establish community-focused services for community care include (1) making national strategic decisions; (2) securing the quality of health services through monitoring, evaluation, and feedback; and (3) working with community partnerships to promote and preserve healthy behaviors or environments (Ministry of Health and Welfare [MOHW] 2011).

This review paper describes the concept of home healthcare based on public health centers, which is a community focused nursing project and one of the strategies of HP 2020. We also discuss the possible outcome effects of these strategies on improvement of health equity in particular.

2. Home healthcare based on public health centers

2. 1 National strategies for enhancing health equity

Home healthcare nursing services in public healthcare centers (PHCs) in each community have been launched to provide nursing care services to patients living in poverty with chronic diseases. It was transformed and expanded from a traditional

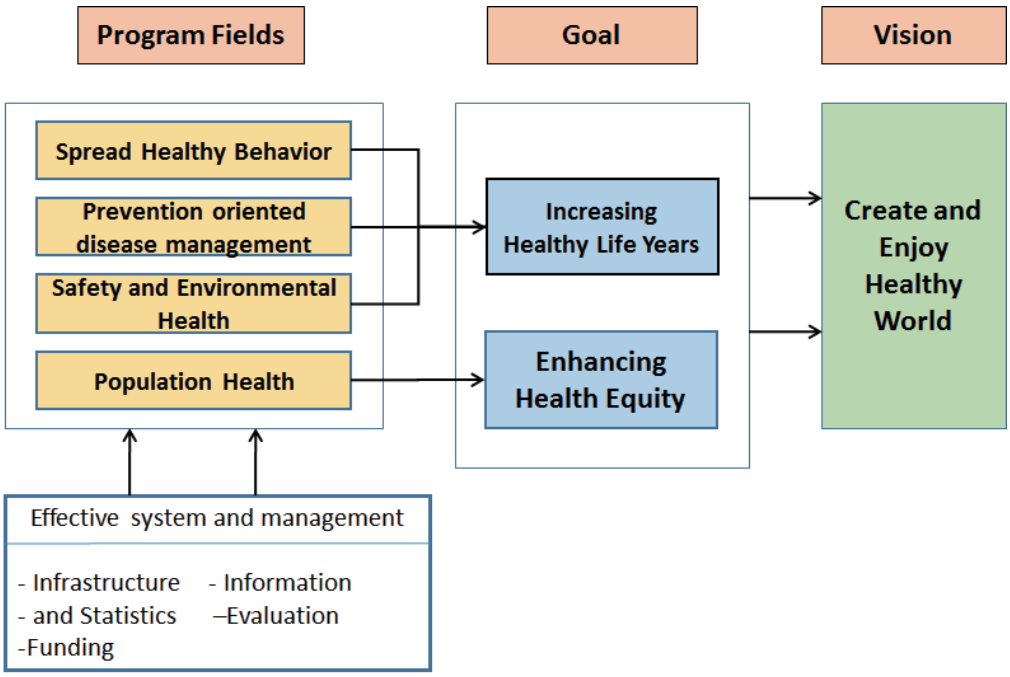

Figure 1. Health Plan 2020 in Korea
Source: MOHW, 2011.

small visiting nursing service to a prevention-oriented home healthcare service for vulnerable people provided by local visiting nurses at a district level. Home healthcare based on the PHC, as one of the national health promotion projects of HP 2020, was commenced with the aim of managing health conditions in vulnerable patients (Figure 2).

When the Act on Long-term Care Insurance for the Aged, No. 23, 2008 was launched, home healthcare was divided into three types: home healthcare based on the PHC, home healthcare based on hospitals, and home healthcare based on long-term care insurance (Table 1). As has been documented in several previous studies, the prevalence of chronic degenerative disease

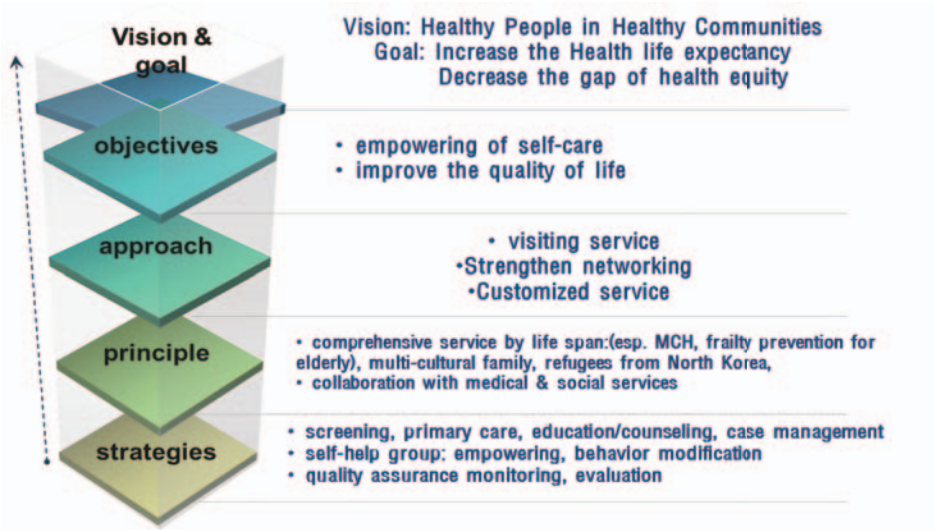

Figure 2. New Health Plan 2020 and Home Healthcare based on the PHC

Source: Ministry of Health and Welfare (2007/2008/2009/2010/2011). Guidelines for Home Healthcare based on the PHC.

Table 1. Home Healthcare system in Korea

Classification	**Home healthcare based on public health centers**	**Home healthcare based on hospital**	**Home healthcare based on long-term care**
Legal basis	Regional Public Health Act No. 9-12	Medical Service Act No. 30	Act on Long-term Care Insurance No. 23
Financial resources	Tax Individual charges: None	Medical insurance (medical care assistance) fund Individual charges: 20% of total cost (medical care assistance: none)	Long-term care insurance fund Individual charges: Institute: 20% of total cost Home care: 15% (medical care assistance: none)
Service providers	Team approach including RN with other paramedical personnel (PT, OT, exercise trainer, dietitian, oral care technician), doctor, social worker	Home healthcare nurse specialist with master's degree	RN or nurse's aid
Objectives	Promotion/prevention of disease/symptoms Behavior modification, self-care empowerment Case management	Support recovery from disease symptoms Home treatment under doctor's orders	Long-term care, rehabilitation
Clients	Poor populations, elderly	Discharge patients	Elderly long-term care needed
History	1990—2002: 2—3 PHN/PHC* 2002—2005: experiment 2007: 2,500 staff, temporary base	Began 2001/02 Nationwide practice at 2nd or 3rd level Hospital	Began 2008/07

*Abbreviations: RN: registered nurse; PT: physical trainer ; OT: occupational trainer ; PHN: Public Health Nurse ; PHC: Public Health Center.

is relatively high in disadvantaged communities and premature death due to complications is increasing rapidly. Additionally, it has been shown that risk factors for the onset and exacerbation of chronic disease, such as unhealthy behavioral habits, drinking, smoking, stress, or obesity, have a stronger negative influence on individuals with lower socioeconomic status. Therefore, the government implemented a prevention-oriented home healthcare service based on the PHC to promote health, modify health risk behaviors, and control risk factors that precede chronic disease (e.g., high blood pressure, diabetes, metabolic syndrome). Individuals with lower socioeconomic status have limited access to health and medical services; this limitation applies to monetary, informational, and psychological access in addition to physical access. Therefore, "visiting" has been chosen as one of the means by which to provide a health promotion service for vulnerable groups. Basic assessment of this service is conducted by nurses according to specific demands; however, a team approach has been taken by various related professionals including nutritionists, physical therapists, and social workers.

2. 2 Target group: Vulnerable populations

Vulnerable people who need to be provided with home healthcare are medical care beneficiaries. Individuals who fall into this category include members of poor families (defined as families living on income that is 120% lower than the minimum cost of living: one person households: 530,000KRW/month, approx. $500; four person households: 1,440,000KRW/month, approx. $1,300), individuals living at or below the poverty line poverty line group (people who are charged 20% of the standard health insurance premium), people aged over 65, female marriage immigrants in multi-cultural households, North Korean migrants, and disabled people. Between 2007 and 2010, there were approximately 4.5 million households comprising recipients of basic living cost assistance and payers of 20% of standard health insurance premiums. The number of registered medical care clients gradually increased during this period; the rate of enrolment for managed home healthcare based on the PHC increased by 25.4% in 2010. While the number of individually registered clients decreased from 15.9 million in 2007 to 14.5 million in 2010, the number of registered households increased from 8.8 million to 11.8 million. This tendency shows that the types of visiting healthcare service clients are gradually changing from family units to single elderly or disabled households who need practical support, which can be viewed as a process of adjustment for the program in accordance with the type of clients who are provided with the service (Table 2).

Table 2. Service coverage rate (unit: household)

Year	Total poor households			Registered client	
	Total (A)	Medical aid	Adjacent poverty line: below 20% of medical insurance premium	Registered household (B)	Coverage rate (B/Ax100)
2007	4,516,101	831,692	3,684,409	876,045	19.4
2008	4,399,644	831,692	3,567,952	1,059,541	24.1
2009	4,561,018	852,420	3,708,598	1,197,500	26.3
2010	4,623,007	882,925	3,740,082	1,175,468	25.4

Source: MOHW (2011) reported data, unpublished.

Table 3. Number of staff by specialty (2013/06)

Staff specialty	No. of staff members	Percentage (%)
Nurse	2,133	88.1
Physical therapist (or occupational therapist)	100	4.1
Exercise specialist	59	2.4
Dental technician	47	1.9
Dietician	39	1.6
Social worker	42	1.7
Total	2,420	100.0

Source: MOHW (2013). Reported data, unpublished.

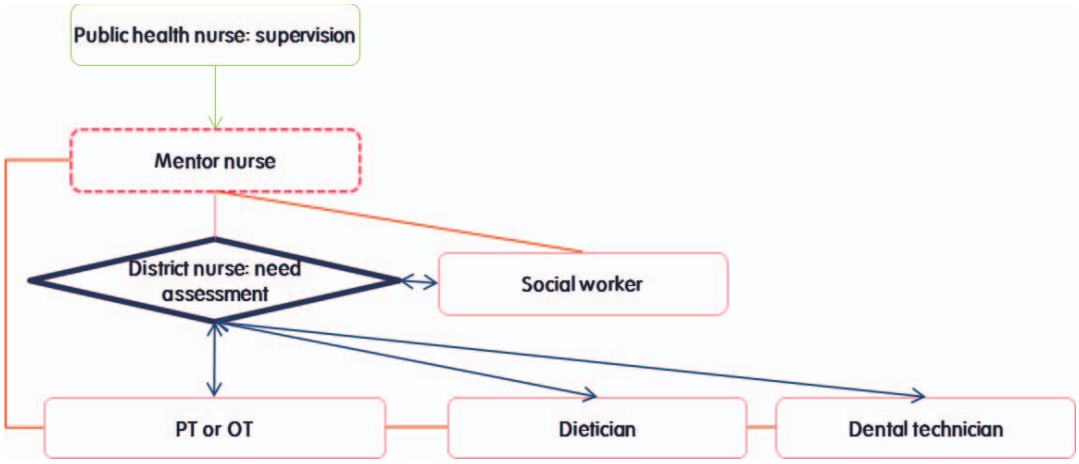

Figure 3. Process of collaboration in practice for home healthcare based on the public health center

2. 3 Organizational structure: system and staff

There are 2,420 PHC-based home healthcare employees (as of June 2013) distributed between 252 nationwide PHCs. These employees are contract workers who renew their contracts annually. The home healthcare teams consist of one PHN employed full-time as a civil servant, one mentor nurse with at least three years' work experience as an annual contract worker, and other contract workers with diverse professional licenses. The PHN in charge of the outreach service team supervises the project and manages 9.6 workers, on average, per PHC. The mentor nurse monitors the project and plays the role of mentor to all PHC workers. District nurses, having completed a basic needs assessment, connect the relevant professionals with the needs of the clients (Figure 3, Table 3).

The number of people employed as home healthcare project workers has increased from 1,979 in 2007 to 2,615 in 2010. The number of registered households needing one worker increased from 442.7 in 2007 to 456.4 in 2009, and then decreased to 449.5 in 2010. This can be seen as a process of adjustment occurring in accordance with the needs of the real recipients of the service. By late June 2010, a total of 749,887 people were registered on the national visiting healthcare database. Of these, 44% were medical care assistance beneficiaries, 33.2% were in the adjacent poverty group, and 22.8% were from other vulnerable groups without economic difficulties (e.g., North Korean migrants, female marriage immigrants, disabled people) or had requested the home visiting nursing service (mainly elderly people living alone; MOHW 2011).

2. 4 Services protocols: home healthcare based on the PHC

The service cycle was determined according to healthcare needs. First, clients were asked whether

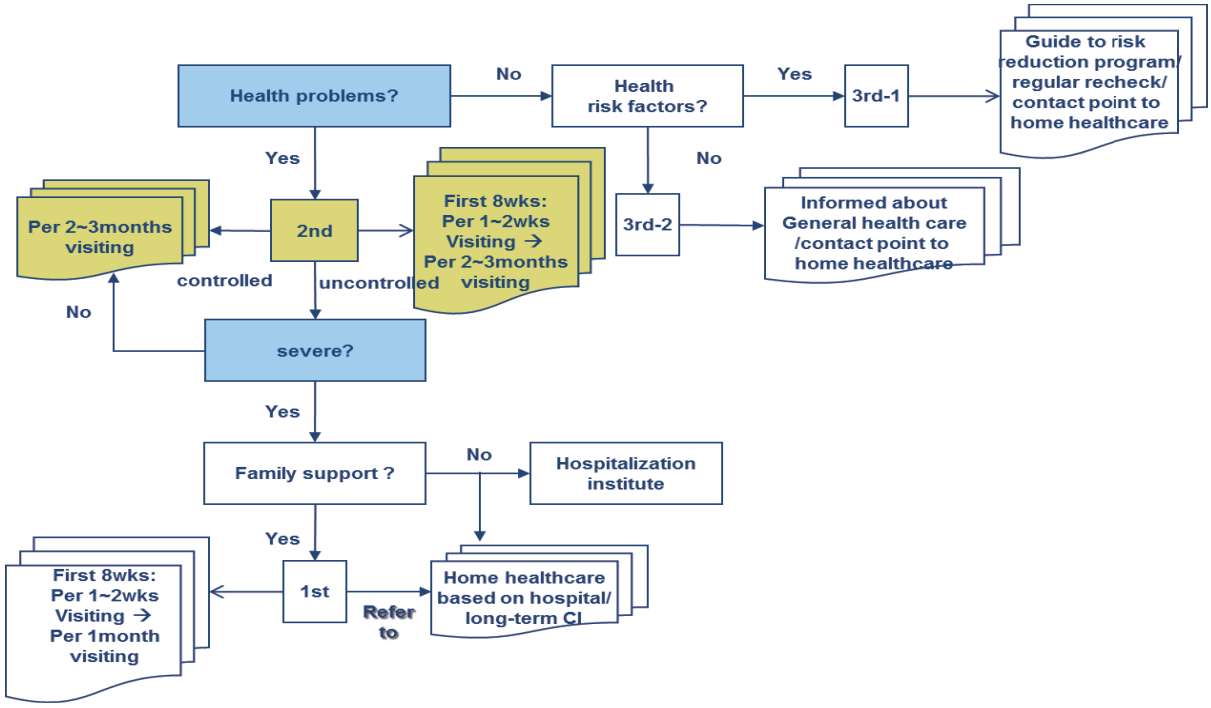

Figure 4. Determination of cycles according to care need factors for home visiting
Source: MOHW (2007/2008/2009/2010/2011), Guideline for Home Healthcare based on the PHC.

they had a medical problem. If they did not, they were classified as group 3 clients. Following this, health risk behavior was measured; if there were no risk factors (group 3-2), general healthcare information was provided and the visiting healthcare project was introduced. If there were risk factors present, educational materials for a concrete care plan were provided and the project and a responsible nurse were introduced. This group (group 3-1) was revisited every six months and health risk factors were measured. If the client had a health problem, the visiting cycle was determined based on the severity of the problem and the degree of family support they received. If they were in a poor situation in terms of these two criteria, in order to provide care in a hospital or elderly nursing home, a facilities consultation was conducted by the long-term care degree-granting evaluation team to decide between home healthcare based on hospital or long-term care insurance. As for group 1 (who have family support), weekly visits were provided for the first eight weeks, after which, monthly visits were provided. If frequent visits were constantly needed, consultations were also conducted to decide between home healthcare based on hospital or long-term care insurance. Group 2 mostly consists of patients with chronic degenerative diseases. Members of the group 2 subgroup, whose conditions could be controlled using self-care methods including medication, were visited once every two or three months to provide motivation for self-care and re-evaluation of disease symptoms. Members of the other group 2 subgroup, whose symptoms were not controllable in such a manner, were visited weekly or bi-weekly for the first 8 weeks, after which a two or three month visiting cycle was initiated. From the data collected at most public healthcare centers, 1.2 to 3% of the total client group were placed in group 1, 25% in group 3, and approximately 75% in group 2 (Figure 4).

2. 5 Nursing interventions

A general nurse essentially has the following seven duties: registration, needs assessment, preparing a care plan, implementation of nursing

interventions, management, and evaluation. When a list of potential recipients is received from local government (list for medical care assistance from a city/ province office, health insurance office, other PHC department or social work office), a general nurse contacts individuals on the list via telephone to introduce the contents of the project and make a request for consent for the provision of the home healthcare services.

Following agreement regarding the process, clients are screened for health issues, risk factors, and service categories of health behavior modification, and then health risk and chronic disease management information is provided based on their life cycle stage. The provision of services is made according to nursing processes; there are common services provided to all clients and additional specific services are delivered according to clients' needs or health problems.

Clients' needs are assessed using customized assessment tools, which depend on their life cycle stage and the content of the nursing intervention and influence the outcome assessment. For groups with health promotion needs, general health maintenance guides are offered, and for groups with chronic disease risk factors, treatments focus on improving and controlling risk factors in daily life. For groups with chronic diseases, regular reassessment and treatment, self-care guidance, and regular visits are provided (Figure 5).

2. 6 Case management

The Korea Center for Disease Control and Prevention (KCDCP) introduced case management to the community that was based on a chronic disease control project, and implemented case management for chronic disease patients with the goal of behavioral change with respect to risk factors. Since 2008, home healthcare based on PHC applied case management processes such as assessment of personal healthcare needs, monitored patients following goal setting, assisted with problem solving, reduced risk factors for

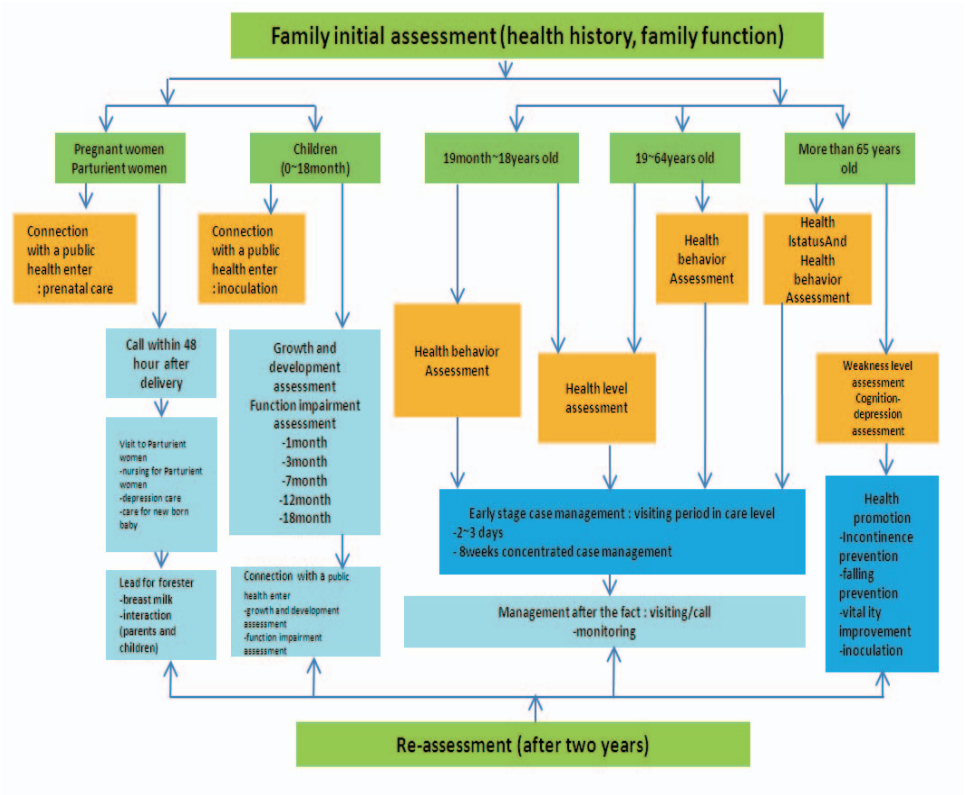

Figure 5. Service model of home healthcare based on the PHC

Source: Ministry of Health and Welfare (2007/2008/2009/2010/2011).

chronic disease patients in vulnerable groups, and guided and supported clients by providing them with information, motivation, and self-control skills. The recipients of case management suffered from various diseases and symptoms including hypertension, diabetes, osteoarthritis, and frailty (Lee 2010).

3. Securing the quality of health services through training, monitoring, evaluation, and feedback

3. 1 Training for staff

The central training institute under the MOHW, which generally supports the project, undertook an annual total education program provided by the chief administrator for field workers to facilitate settlement of the standardized nationwide service. This organization develops and maintains the annual educational plan, but the actual education was provided according to region at 11 to 15 nursing colleges as a function of academic-industrial co-operation (Figure 6).

Training and education for staff has been divided into three sections. An annual two-day workshop is provided for the heads of PHCs and city and provincial departmental chiefs. For th e municipal or provincial middle level managers and PHNs who directly supervise the projects, 152 hours' training had been undertaken and 64 hours of training was provided for field staff. The required training time was reduced to 64 hours and 48 hours for officials and PHNs respectively, and 72 hours and 64 hours of training were required for novice and continuing field workers, respectively. Continuance of the training program was maintained through requirements for 40 hours

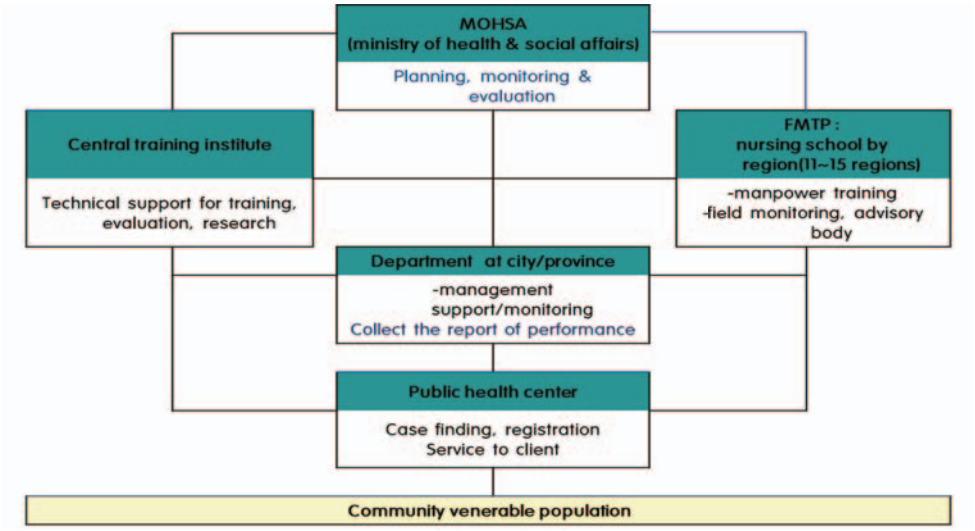

Figure 6. Organizational chart of training, monitoring, evaluation, and home healthcare based on the PHC

Table 4. Training courses by target group (2007)

category	Course of managers'	Course of middle range managers'	Course of field workers'
Target group	▪ Head of Public health center ▪ Director of city/province	▪ 16 city/province officer, charged home healthcare(total 32 persons) ▪ 254 public health center, charged officer(total 502 persons)	▪ Field worker of home health care (about2,400persons)
duration	February (2days)	February to November (152hours/10months)	March to November (64hours/4 times)
type	workshop	Lecture, discussion Field observation	Lecture, discussion Field observation

of education for workers with three or more years of experience and 48 hours for those who had worked for less than three years (Table 4).

3. 2 Data management: computerization for registered data

Registration data containing clients' basic personal information and health needs have been input via a nationwide computer network, with all records gathered and controlled at a national level. Electronic data can be presented in statistical format as an interim report on a monthly, quarterly, or biannual basis. The central government produces an index of the health of vulnerable groups regularly and systematically supports follow-up policies based on the results (Figure 7).

3. 3 Monitoring service quality

Two or more professionals–one professor from a local nursing college in charge of FMTP education and a PHN at local (municipal or provisional) PHCs–visited two households in the field. They determined whether the service was being provided according to the standard guidelines, supervised field staff, and discussed a case scenario with all the staff at the center. A field management training program, which is a group learning opportunity for theoretical matters, was held for three months (June to August) on an annual basis to understand specific difficulties and supervise staff applying the education to specific cases in the field. Issues to be resolved were collected via field monitoring, reported to the Central Training Center and the Ministry of Health and Welfare, which are general administrators of the home healthcare based on the PHC project, and used to discuss solutions or revise guidelines.

3. 4 Outcome evaluation and feedback system

The project support team from the MOHW conducted a project evaluation according to the results of the quarterly reports and field evaluations. Field evaluations were conducted by selecting two public healthcare centers with outstanding and poor performance reports and examining and supervising project operation processes. A general evaluation of the results and project outcome is conducted annually or once every three years. Long-term evaluation, primarily in the form of policy research, is conducted under the supervision of the MOWH.

4. Community participation and partnership

The Minnesota Department of Health suggested 17 interventions that should be implemented by public health nurses for the sake of community health. We know that while individual-focused interventions for registered individuals or households are satisfactorily provided, the project has weaknesses regarding the development

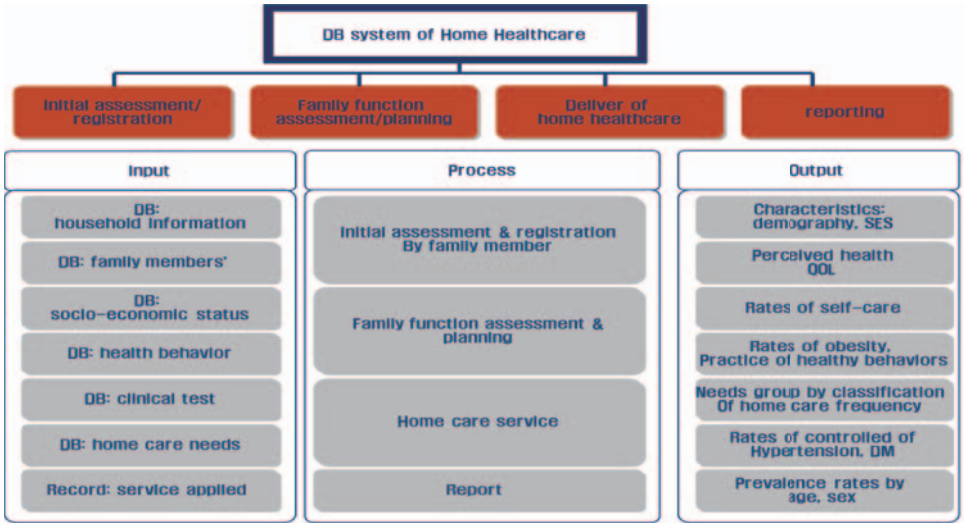

Figure 7. Structure of DB (DataBase) of home healthcare based on the PHC

Table 5. Comparison of nursing interventions and wheel of public health interventions in Minnesota

Public Health Interventions[1]	**Home Healthcare based on the PHC in Korea**
Case finding	New case finding through screening
Surveillance	Prevention of suicide for elderly people who live alone Prevention of heart attack or symptoms from heat wave/cold for elderly people
Disease and health event investigation	Search health event and inform client
Outreach	Home visiting
Screening	Screening by life span
Referral and follow-up Consultation	Referral to doctor's office Regular follow-up for patients with chronic disease
Case management	Case management for patients (hypertension, diabetes mellitus, cancer, arthritis, frailty prevention)
Delegated functions	Team approach Screening and case finding by nurse, then delegated to nutritionist, occupational therapist or physical therapist
Health teaching	Self-care teaching
Counseling	Health education and self-care counseling
Collaboration	Collaboration with social worker
Coalition building	***Poor***
Community organization	***Poor***
Advocacy	Advocate for clients Try to obtain a fund for clients' care from community resources and refer to social services
Social marketing	***Poor***
Policy development and enforcement	***Poor***

[1]Minnesota Department of Health (2001)

of community-focused professional nursing activities, such as coalition building, community organization, social marketing, and policy development and enforcement (Table 5). The home healthcare project was not able to organize partnerships based on regional units or foster community participation.

5. Outcome and impact evaluation

5. 1 Contribution to improving community health

To evaluate the contribution of home healthcare based on the PHC project with respect to health promotion for vulnerable patients, the following cohort data by year of registration is extracted from Lee and Jang (2013); furthermore, results of an analysis of data from a community health survey and the economic effects of the project are quoted from Kim et al (2010).

5. 2 Change of health outcomes: Health status, bio-behavioral indexes, and health behaviors

The data show that in the group of patients who received more than four visits per year after their first registration in 2007, the percentage of patients who had good subjective health increased by 4% per year from 7.0% to 13% (Table 6).

Total cholesterol decreased from an average of 175 mg/dl to 172.1 mg/dl in 2007 registrants after one year of home healthcare, and there was a meaningful difference between 2008 registrants and 2007 registrants who had been managed for a year. Total cholesterol also decreased among 2008 registrants after a year of management and the prevalence of hypercholesteremia showed a decreasing tendency until 2009. Regarding HDL cholesterol, though it appeared to increase within the year following registration, it decreased during the second year, and in the third year, was at a similar level as it was at the time of registration. Additionally, the prevalence rate of high HDL cholesteremia, aside from the first year management of 2007 registrants, showed an increasing tendency after home healthcare (Table 7).

Regular exercise rates gradually increased,

aside from the 2010 data (Table 8); the proportion of high-risk drinkers gradually decreased in both male and female recipients. Smoking rates for male recipients increased slightly after a year of healthcare service; however, the number of attempts at smoking cessation also increased (Table 9).

5. 3 Change in health outcome: management of chronic diseases

The project registered and managed 674,031 high blood pressure patients at the end of 2011; their collective drug compliance rate was 86.3% and blood pressure regulation (control) rate was 68.7%. Relative to 2008 rates (i.e., 66.3%

Table 6. Percentage of self-rated good health by year in clients who received four visits or more per year

Year of registration	Year of measurement							
	2007		2008		2009		2010	
	n	%	n	%	n	%	n	%
2007	713	7.0	997	11.0	986	13.0	241	11.7
2008			444	11.1	603	17.9	131	17.1
2009					447	13.2	108	12.9
2010							373	12.3

Table 7. Mean changes in dyslipidemia by year

Dyslipidemia	Year of registration	Year of measurement							
		2007		2008		2009		2010	
		n	M ± SD	n	M ± SD	n	M ± SD	n	M ± SD
Total cholesterol	2007	47,855	175.8±34.5	60,382	172.1±32.8	67,078	170.3±31.2	12,438	171.6±33.8
(>200mg/dl)	2008			34,034	176.3±35.2	35,636	172.2±31.3	7,546	172.7±35.7
	2009					47,961	173.6±33.5	8,275	172.6±35.4
	2010							4,253	176.3±37.9
HDL-cholesterol	2007	4,789	47.8±19.9	5,233	53.22±30.6	6,498	50.9±36.1	2,914	47.2±26.9
(male <40mg/dl) (female <50mg/dl)	2008			2,832	51.8±27.4	2,853	54.8±39.7	1,986	46.6±20.1
	2009					4,151	54.7±39.2	2,070	48.6±25.1
	2010							1,120	48.8±18.9
LDL-cholesterol	2007	3,294	111.0±36.8	4,554	115.5±36.5	5,519	108.7±35.6	2,506	105.3±34.2
(≥130mg/dl)	2008			2,454	113.2±33.9	2,432	111.8±34.2	1,731	107.4±35.2
	2009					3,491	112.7±34.3	1,828	107.7±32.7
	2010							951	113.2±35.4
Triglyceride	2007	6,268	165.6±85.6	9,133	145.5±73.3	9,827	151.3±79.4	3,002	165.2±81.7
(≥200mg/dl)	2008			3,607	148.8±76.1	4,220	153.3±84.2	2,021	168.5±84.4
	2009					4,762	159.1±86.7	2,033	165.1±84.4
	2010							1,130	171.6±90.2

HDL: High-density lipoprotein; LDL: Low-density lipoprotein

Table 8. Percentage change in exercise behavior by year in clients who received four or more visits per year

Year of registration	Year of measurement							
	2007		2008		2009		2010	
	n	%	n	%	n	%	n	%
2007	1461	13.7	2,334	21.9	2,336	21.9	472	4.4
2008			954	23.8	1,259	31.5	229	5.7
2009					1,039	29.2	272	7.6
2010							699	22.1

Table 9. Percentage change in smoking behavior by year in clients who received four or more visits per year (male)

Smoking behavior	Year of registration	Year of measurement							
		2007		2008		2009		2010	
		n	%	n	%	n	%	n	%
Current smoking rates	2007	896	41.8	1,727	41.6	1,670	42.9	1,620	49.0
	2008			291	39.6	516	39.1	614	44.7
	2009					235	35.8	640	44.5
	2010							219	42.9
Smoking cessation trial rates	2007	392	42.7	746	43.5	707	44.9	637	41.8
	2008			120	41.5	212	43.6	242	42.8
	2009					89	42.8	232	40.6
	2010							83	43.9

and 56.6% respectively), patients' condition management had markedly increased.

The project registered and managed 250,675 patients with diabetes and at the end of 2011, their collective treatment (medication and/or injection) compliance rate was 87.5%, blood sugar management rate was 60.1%, and HbA1c regulation rate was 53.4%. Relative to 2008 rates, (i.e., 65.1%, 51.5%, and 44.9% respectively), patients' condition management improved remarkably.

5. 4 Improving functional status in older adults

In Seoul metropolitan city, this project provides services to approximately 25,940 people aged 65–74, 24,530 people aged 75–84, and 6,514 people aged 85 years and over (Lee and Jang 2013). There was some evidence that the home healthcare project was effective in preventing frailty in the elderly. The prevalence of frailty was 18.5% in 2009, and this decreased to 17.4% in 2011; this declining tendency proved to be meaningful in a linear regression model. In men, an annual tendency toward decline is also evident. Even though there was a significant decline in frailty in people aged 65–84, no differences were detected in the group aged 85 years and over. There is a possibility that people aged 85 years and over were excluded from focused group interventions in

Table 10. Medication compliance and hypertension control rates (unit: persons, %)

Year.Month	No. of Hypertension Patients	No. of patients taking medication over 20 days/month	Rate (%)	No. of Controlled*	Management rate (%)
2008.12	505,053	334,970	66.3	285,876	56.6
2009.12	594,428	415,904	70.0	373,412	62.8
2010.12	399,531	272,584	68.2	229,266	57.4
2011.12	674,031	581,856	86.3	463,356	68.7

*Systolic blood pressure <140 mmHg and diastolic blood pressure <90 mmHg; Source: Ministry of Health and Welfare

Table 11. Medication compliance and diabetes control rates (unit: persons, %)

Year.Month	No. of diabetes patients	No. of patients taking medication over 20 days/month (%)	No. of Controlled			
			Blood sugar	%*	HbA1c	%**
2008.12	182,648	118,936 (65.1)	94,124	51.5	18,128	44.9
2009.12	213,476	149,376 (70.0)	121,762	57.0	45,616	48.6
2010.12	146,082	100,939 (69.1)	73,240	50.1	23,015	57.5
2011.12	250,675	219,337 (87.5)	150,675	60.1	26,953	53.4

*Fasting blood sugar <126mg/dl, PP2 <200mg/dl (after meal), **HaA1c < 7.0mg/dl.

Source: Ministry of Health & Welfare (2013). Reported data, unpublished.

recipients' frailty prevention programs. However, a lack of increase in the prevalence of frailty in the group aged 85 years and over can also be understood as a success. Prevention of frailty is an outcome commonly found in all age groups and the decline in prevalence according to sex and age proved to be meaningful according to linear retrogressive analysis.

Frailty is defined as "complex symptoms (that is, syndrome) that cause the loss of ability to retain physical, functional and/or cognitive health." Among the representative indicators of frailty, viz. "losing 2–3kg of weight in the past 6 months," "BMI under 18.5," or "feeling fatigued," there were meaningful changes in loss of weight and BMI. Although the present data offer no understanding of whether muscle loss was prevented and the exact mechanism of these effects, it can be ascertained that the project intervention can prevent changes in weight, which is extremely important for frailty and BMI reduction.

When the total GDS score is > 10, the presence of depressive symptoms are indicated; based on these standards, annual changes in the prevalence of patients with depressive symptoms also proved to be meaningful. While 19.3% of elderly female clients had depressive symptoms in 2009, the prevalence decreased to 15.6% in 2011. With respect to elderly male clients, the rate decreased from 17.5% in 2009 to 14.8% in 2011. These reductions in prevalence indicate that the project has been proven effective in reducing depressive symptoms. The reduction of depressive symptoms was common to all age groups and the decline in the prevalence rate according to sex and age was shown to be meaningful in linear retrogressive analysis.

5. 5 Client satisfaction

In the satisfaction survey conducted by the Korea Research Center, 93.0% of the recipients responded positively to "the home healthcare staff explained my disease well," 89.5% to "the staff responded promptly to service demands," 70.7% to "it is convenient to ask for help for problems faced individually," 77.3% to "my self-care ability was enhanced," 64.9% to "my health condition has been improved through the home healthcare service." The overall level of satisfaction with the

home healthcare service was 90.9% (Ministry of Health and Welfare 2012).

5. 6 Health impact analysis: reducing health disparity

In order to evaluate improvements in the effectiveness of home healthcare service with respect to health equity using a community health survey that was representative of health monitoring, a data set was composed. Among those who participated in the 2010 community health survey in Seoul, respondents who had visited local PHCs and received home healthcare services at those centers were selected for an intervention group for the home healthcare project. A similar number of people suffering from the same conditions as members of the intervention group were selected to form a comparison group and direct comparative analysis between the intervention and comparison groups was conducted. When the health levels of the lowest quintile of income group (comparison group) and the home healthcare service recipients (intervention group) were compared, the intervention group exhibited fewer symptoms than did the control group (Figure 8).

Further, the intervention group exhibited lower smoking rates, but no difference in regular health check-up rates was found between the two groups. Smoking and chronic disease control rates were meaningfully improved in the intervention

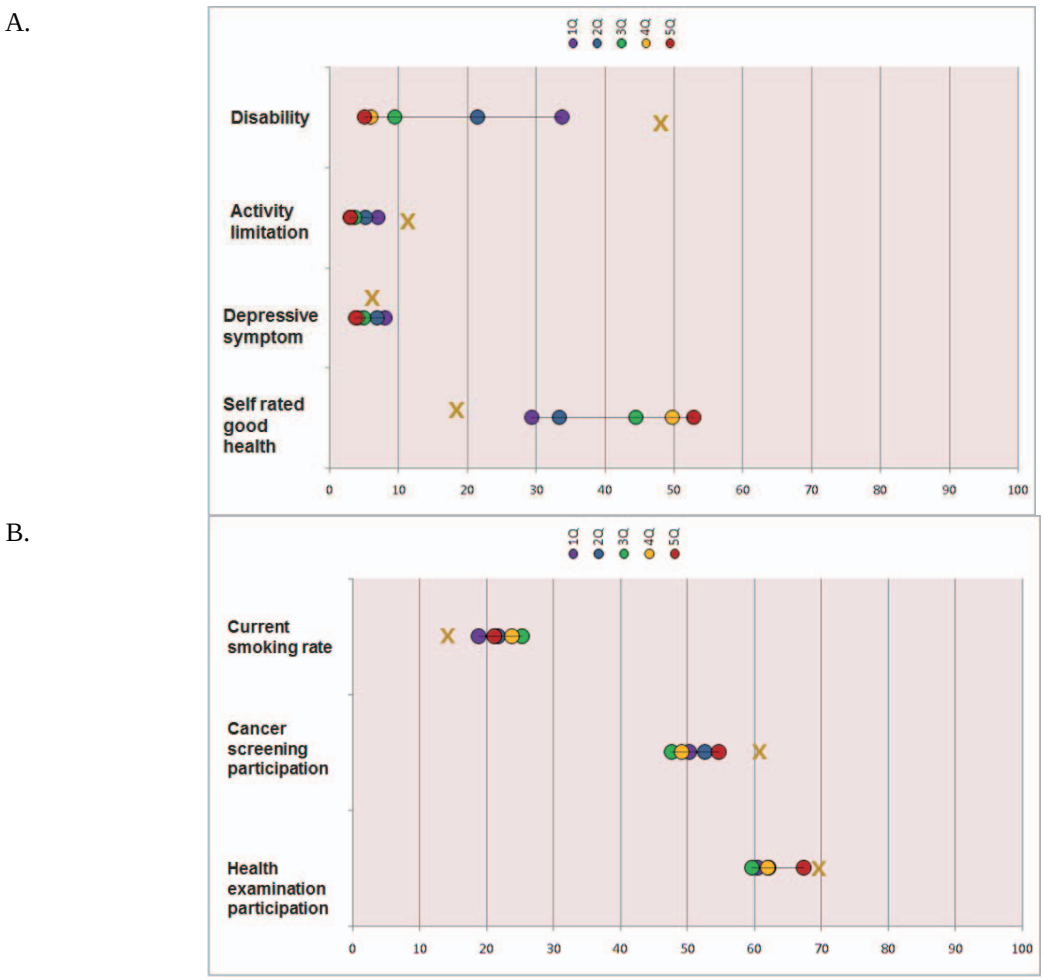

Figure 8. Mean prevalence of health status in each income quintile for the general population (o) and the intervention group (x) (A), and comparison of health behaviors in the lowest 5th level of the income group (o) and the home healthcare intervention group (x) (B) Data: Community Health Survey

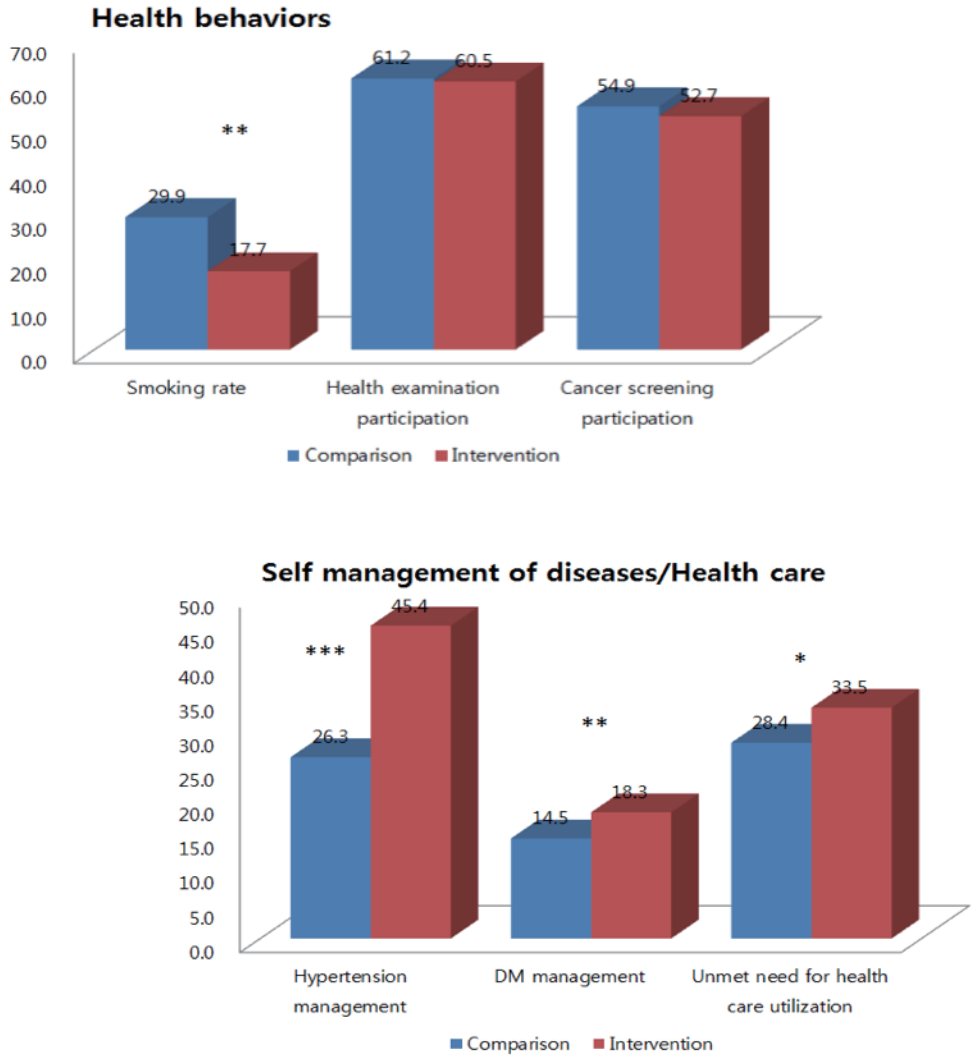

Figure 9. Difference in health behaviors and disease management rates between intervention (n = 6,105) and comparison (n = 6,885, 1:1 matched by propensity score) groups

group (Figure 9); additionally, with respect to stress and depressive symptoms, the intervention group displayed the same or lower levels than the comparison group. This clearly indicates the effectiveness of the visiting healthcare service intervention. However, high levels of demands caused by an unmet need for healthcare remained.

5. 7 Economic benefits

In order to analyze the effectiveness of home healthcare based on PHCs, several studies have been conducted in an attempt to emphasize its economic benefit (Kim et al 2010, Ko and Lee 2011). Ko and Lee (2011) evaluated the input cost of home healthcare based on the PHC for hypertension using these two aspects: cost-benefit and cost-effectiveness. The net benefit indicated a figure above 0 and the benefit-cost ratio indicated a figure above 1, demonstrating the economic feasibility of public healthcare. Kim et al (2010) analyzed cost-benefit using secondary data and a literature review and found that home healthcare was validated as economically effective.

In clients aged 19 years and over and registered

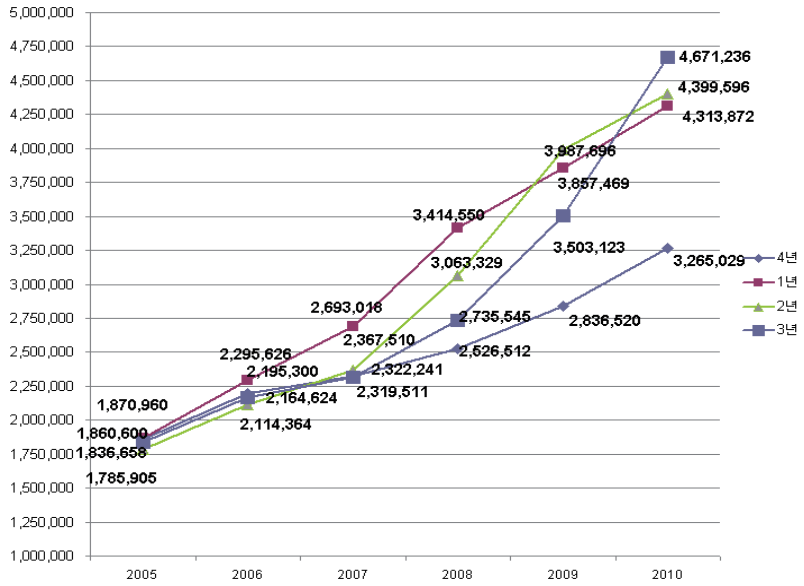

Figure 10. Total mean medical costs per year (2005–2010) for registered clients aged 65 and over

in 2007, the total cost of medical expenses incurred in the four years to 2010 in which the home healthcare group was provided home healthcare based on the PHC increased by 44.5%, from 2,219,057 KRW in 2006 to 3,206,769 KRW in 2010. Annual hospital expenses and the duration of hospitalization increased by 84% from 557,044 KRW in 2006 to 1,025,190 KRW in 2010 and by 60.5% from 5.8 days in 2006 to 9.3 days in 2010. This group incurred lower medical expenses and demonstrated less variation in duration of hospitalization than in the first to third years of home healthcare. Conversely, annual outpatient hospital expenses incurred during the four years of the provision of home healthcare increased by 28% from 913,995 KRW in 2006 to 1,169,521 KRW in 2010; annual medication expenses increased by 35.3% from 747,781 KRW in 2006 to 1,011,527 KRW in 2010, the number of outpatient medical consultation days increased by 4.1% from 44.7 days in 2006 to 46.5 days in 2010, and the annual number of medication administration days increased by 26.3% from 284.9 days in 2006 to 359.9 days in 2010. These results suggested that the home healthcare group incurred higher expenses for outpatient clinics and medication in the fourth year than in the first to third years of the provision of home healthcare. In clients aged 65 years and over and registered in 2007, the annual medical expenses incurred during the four years of the provision of the home healthcare group increased by 48.7% from 2,195,300 KRW in 2006 to 3,265,029 KRW in 2010, annual hospitalization charges increased by 112.7% from 510,128 KRW in 2006 to 1,085,039 KRW in 2010, the annual length of hospitalization increased by 112.8% from 4.1 days in 2006 to 9.2 days in 2010, and the number of outpatient medical consultation days increased by 1.4% from 49.1 days in 2006 to 49.7 days in 2010. Compared to the first to third years of the provision of the home healthcare group, both the 19 years old and over group of clients and the group of clients aged 65 years and over incurred lower medical consultation expenses and hospitalization charges and less variation in duration of hospitalization in the fourth year of the provision of home healthcare. Conversely, the lower number of outpatient medical consultation days demonstrated that the home healthcare service based on the PHC was validated as effective only for the group aged 65 years and over (Figure 10).

When analyzing the direct benefits of the home healthcare service based on the PHC for clients aged 19 years and over, it was estimated that medical expenses increased less on an annual basis in terms of the service providers' use of an annual budget for customized home healthcare based on the PHC per person. The net benefit was 119,215 KRW per individual (cost 41,898 KRW and benefit 161,113 KRW) and 182,016 KRW for the clients aged 65 years and over (cost 41,898 KRW and benefit 223,914 KRW) in 2010. The total net benefit for the home healthcare service based on the PHC in 2010 was 162,697,240,670 KRW for the clients aged 19 years and over. Further, the total net benefit was 173,299,071,744 KRW (1,733 billion KRW) when considering only the clients aged 65 years and over. Home healthcare service based on the PHC has been validated as economically effective, particularly for the clients aged 65 years and over as the annual rise in medical expenses incurred was lower. The cost-benefit was three times higher for the clients aged 19 years and over and 5.3 times higher for the clients aged 65 years and over.

6. Conclusions and suggestions

6. 1 Further suggestions: public health nursing practice

In this paper, home healthcare based on the PHC in South Korea was discussed as a case of community-focused public health nursing practice. This service provided a district and visiting nursing service aimed at promoting self-care ability and offering information and motivation. This was implemented in order to equip people with low socioeconomic status at a local community level with the ability to address issues surrounding health promotion, disease prevention, and disease management themselves. As a result, correcting individuals ' health status and behaviors positively influenced health indicators and biophysiological variables. Additionally, there was an economic effect in that medical expenses were reduced. This result was obtained by monitoring standards of the client-focused service and regularly checking periodical evaluations.

However, the ultimate goal of the provision of this service was improvement in health equity, for which sufficient understanding of poverty (conceptual skill) and processes involved in mobilizing and developing resources, that is, skills for inducing change in people of lower economic status (practical skill), are needed. In other words, it is important to encourage participation by service recipients and form a co-operative partnership with them. It is necessary to share awareness that individual deficit needs can be met through communal effort and combined social and political movements in both local political decisions and co-operative, voluntary participation, which are needed for the success of the project and changes in the local community (Figure 11). This is a limitation of home healthcare based on the PHC in South Korea, as it is a provider-centered service.

6. 2 Competency as a public health nurse

Public health nursing practice involves working capability that is determined by a combination of nursing care competency and knowledge of public health. When compared to the figure below (Figure 12), Korean home healthcare based on the PHC had difficulty providing complete community care due to insufficiency in the capability of public health professionals, though the intervention delivered through nursing processes was well performed.

The most significant constraint on the development of Korean home healthcare based on the PHC into community-focused care is the instability of the employment of human resources. Nurses employed by this project are contract employees who need to renew their contract annually. When the same nurse is employed for more than twenty months, the government must accept him or her as a permanent employee according to the law. However, as this is not

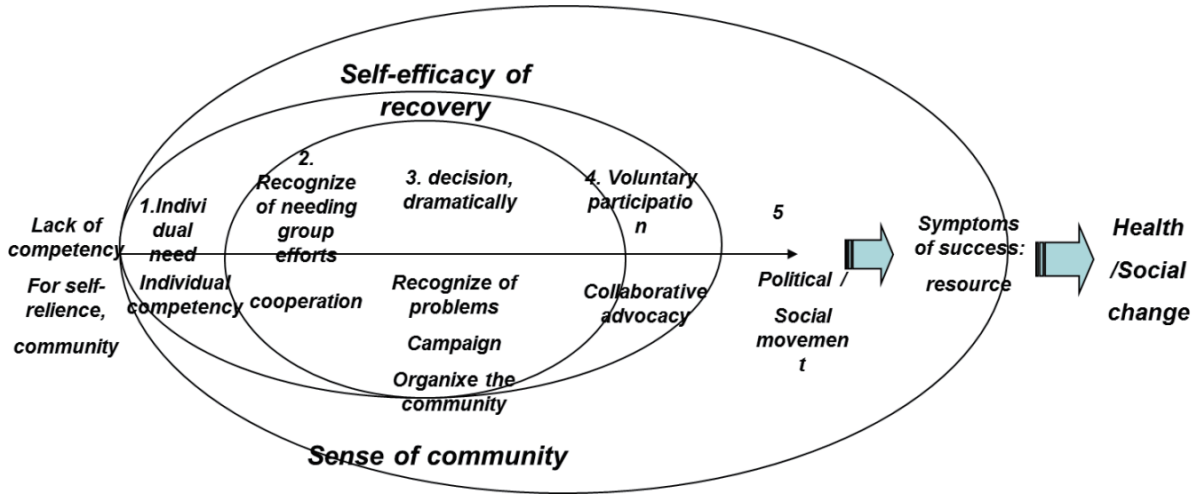

Figure 11. Theoretical model of community change (Stanhope & Lancaster, 2002)

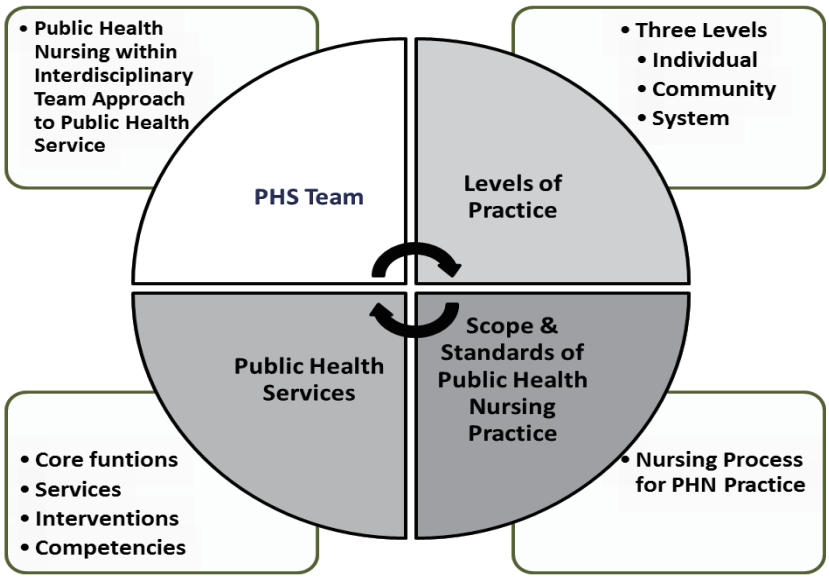

Figure 12. Model of Public Health Nursing Practice
Source: Minnesota Department of Health Section of Public Health Nursing.

usually the case, the project has the problem of not being able to repeatedly hire staff who know a given community well and were trained through the education program. Only when the Korean government shows a willingness to solve the employment problem with suitable policies will home healthcare based on PHC be able to develop its public nursing activities to improve the health equity issue in disadvantaged patients at a community level. The next step of development would be to raise the capability to attain that goal, which is the next step of development.

6. 3 Strategies for promoting and evaluating community care

Public health nursing practice within the public health sector involves two specific processes that are applied in public health nursing practice, of which "community-based individual, family, and group processes" are distinctively nursing. While population health outcomes are the overall

objective of the public health system, public health nursing contributes to this via the implementation of specific nursing processes in addition to the general public health process. The public health nursing practice model, extended by the American Nurses' Association (2007), is based on the following assumptions:

* Focus on entire population
* Reliance on an assessment of population health status
* Broad determinants of health
* Primary prevention is the priority
* Three levels of practice - individual/family focused, community-focused, and system-focused
* Target all who might benefit
* Dominant concern for the greater good of all people
* Attaining health in environmental, social, and economic conditions
* Resource allocation for maximum population health gain
* Collaboration among professionals and organizations.

Compared to these assumptions, which must be secured by public health nursing, the home healthcare based on the PHC nursing intervention in Korea is insufficient in terms of providing professional activities for local communities or organizations. For health promotion in the local community within the Korean system of public health and medical services, an effort should be made to transform the present public nursing project into a community or system based, population-focused public health service that transcends the individual-focused service category.

In this regard, there is a need to examine issues surrounding elements of the present public health project that can be resolved through nursing processes and knowledge of public health science. In addition, the client-centered way of providing services and present realization should be reconsidered.

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