

The effect of the 3-step health education and tele-coaching program for the disabled people with hypertension in rural region

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Abstract. Purpose: The purpose of this study was to evaluate the effectiveness of the 3-step health education and tele-coaching program for the disabilities with hypertension in rural region. Method: The interrupted time series/quasi-experimental study of one group was conducted for 15 months at the rural community health center. The 3-step health education and tele-coaching program was given to participants during 15 months. Results: There were significant changes in self-management ($F = 3.406$, $p < .01$) and preferred salt concentration ($F = 6.388$, $p < .001$) between baseline assessment and other time points. Systolic and diastolic blood pressure had no significant differences between each time point and was within a normal range over time. Conclusion: The tailored program for disabled people with hypertension is effective in changing health-related behaviors regarding salt restriction and self-management of hypertension.

Keywords: Disabilities, Health education, Tele-coaching program, Rural region

1 Introduction

Physically disabled people suffer with chronic disease in addition to their disabilities [1]. According to the recently published report in the Korean Institute for Health and Social Affairs, about 70% of disabled individuals had chronic health problems such as vascular disease and musculoskeletal illness. Specifically, the four most prevalent chronic diseases in this group of people were hypertension (33.5%), degenerative arthritis (10.3%), diabetes (8.9%), and stroke (7.7%) [2]. Physical disability resulted from chronic disease such as stroke and indeed the 81% of stroke-induced disability had chronic diseases prior to brain attacks [2]. With consideration for the occurrence rate of disability acquired by chronic diseases, the relationship between disability and illness indicates that people with

developmental or acquired disability tend to be exposed to risk factors of generating another attack on physical, psychological, and cognitive dysfunction.

The population of disabled elderly over 50 years of age increased up to 70% in 2011 [2]. The proportion of disabled people in rural area is higher than that of in urban and these rural residents might have limited chances to receive self-care education programs and professional practices from community healthcare providers [3]. These represent that old people who have physical disability and reside in rural areas may have difficulties in dealing with their chronic diseases leading to another physical impairment.

Hypertension has been paid public attention due to the severity of health problems caused by uncontrolled hypertension. Not surprisingly, high blood pressure is closely associated with the occurrence of cerebral vascular accidents and cardiovascular disease [4]. Active treatment of uncontrolled high blood pressure reduces the risk of recurrent stroke by more than a quarter [5]. The improvement of self-monitoring skills through patient education and nurse-led telephone support is an effective way to maintain a normal range of blood pressure and carry out healthy lifestyles such as physical exercise, low-sodium diet, regular blood pressure measurement, and medication adherence [3, 6, 7].

Various interventions for people with hypertension were developed in clinical and community settings [8-14]. However, there were no therapeutic programs that help health care professionals use to enhance the level of self-management in people who had both physical disability and hypertension in rural areas. Therefore, this study was conducted to develop the 3-step health education and tele-coaching program to manage hypertension and to evaluate the effectiveness of this self-management program in rural residents with disabilities.

2 Method

2.1. Design and sample

We conducted an interrupted times series/quasi-experimental study of one group for 15 months from September, 2011 to December, 2012. This study was conducted at community health care center in Okcheon-gun, north Chung province in Korea and all participants provided written informed consents. Fifty seven participants were enrolled at the baseline assessment, 47 participants were included at the second program and the third program, and 15 participants finally completed the third program over 15 months. The 3-step health education and tele-coaching program consisted of three steps, and it is started with baseline assessment in September, 2011. The step 1 started in November, 2011, and the step 2 was provided four months later on April, 2012, and we gave the last intervention in November, 2012 again. Each step consisted of six weekly education sessions of one hour duration. Educators called study participants and provided tele-coaching about

the content of previous education and individual behavioral counselling in relation to difficulties in changing their lifestyles between each session. In addition to the baseline assessment, pre and post assessment was completed before and after each step.

2.2 Analyses

Repeated measured ANOVA was used to assess the changing pattern of outcome variables over time. And we used paired t-test to evaluate the differences between each time points.

3 Results

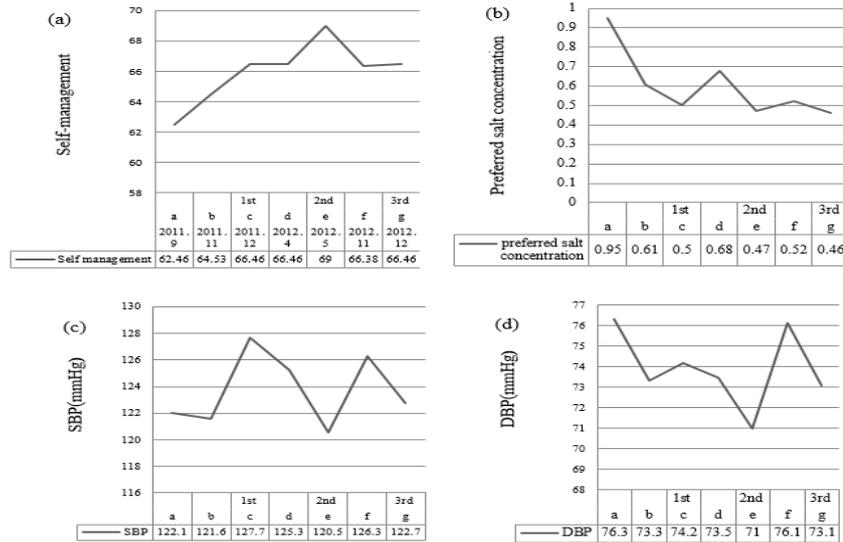
This study included 15 participants and the results were as follows (Table1). There were significant changes between baseline assessment and other time points on self- management ($F = 3.406, p = < .01$). And the self-management score following the 1st session and the 2nd session didn't significantly lower than that of right after the 1st session intervention (Figure1). There were significant changes between baseline assessment and other time points on preferred salt concentration ($F=6.388, p<.001$). And the effect of intervention on preferred salt concentration was found across time points except for the 4th time point ($p = .073$). Salt concentration four month following the first session of intervention increased as compared with that immediately after the first intervention but the difference was marginally insignificant ($p = .067$). And salt concentration six month following the second session did not significantly increase as compared with that immediately after the second intervention ($p = .452$) (Figure 1(b)). SBP and DBP didn't show significant differences over time but they remained in normal range stably than baseline assessment (Figure 1(c), 1(d)). Self-evaluation of salt intake level dropped after each program but there were no significant differences ($F=1.560, p=.169$).

Table 1. Changes in self-management, systolic blood pressure, diastolic blood pressure, preferred salt concentration and self-evaluation of salt intake in time sequence

Variable s	a	b	c	d	e	f	g	F	p	Post hoc
	M(SD)									
Self - manage ment	62.53 (6.45)	64.60 (5.94)	66.33 (4.76)	66.66 (5.05)	68.93 (3.99)	66.26 (5.83)	66.33 (5.92)	3.4 06	.00 5	c,d,e ,f> a* e > b* e >

										c*
SBP	122.06 (12.08)	121.60 (13.26)	127.66 (19.55)	125.26 (10.05)	120.53 (15.26)	126.26 (11.24)	122.73 (12.07)	.97 3	.44 9	
DBP	76.33 (11.01)	73.33 (9.28)	74.20 (12.68)	73.46 (12.63)	71.00 (11.07)	76.13 (8.93)	73.06 (7.79)	.90 1	.51 7	a > e*
Preferred salt concentration	0.95 (0.55)	0.61 (0.21)	0.50 (0.26)	0.68 (0.26)	0.47 (0.19)	0.52 (0.19)	0.46 (0.18)	6.3 88	.00 0	a > b,c,e .f,g* b > e,g* d > e,g*
Self-evaluation of salt intake	4.69 (2.25)	3.92 (1.97)	3.61 (2.06)	3.53 (1.66)	3.23 (1.78)	3.69 (2.17)	3.46 (2.02)	1.5 60	.16 9	a > d, e,g*

Note. a = baseline assessment ; b = pre test on step 1 ; c = post test on step 1 ; d = pre test on step 2 ; e = post test on step 2 ; f = pre test on step 3 ; g = post test on step 3 ; SBP = systolic blood pressure; DBP = diastolic blood pressure.



Note. a = baseline assessment ; b = pre test on step 1 ; c = post test on step 1 ; d = pre test on step 2 ; e = post test on step 2 ; f = pre test on step 3 ; g = post test on step 3 ; SBP = systolic blood pressure; DBP = diastolic blood pressure.

Figure 1. Changes in study outcomes from baseline assessment to 15 months ; (a) Self management ; (b) Preferred salt concentration ; (c) Systolic blood pressure ; (d) Diastolic blood pressure.

4 Conclusion

The tailored program, the three-step health education and tele-coaching program, for people with disability was effective in enhancing self-management and behavioral change for the disabled people with hypertension. And we recommend step by step health education and tele-coaching programs for the elderly with disabilities to promote life style modification for managing hypertension. The patients with chronic disease need repeated education for at least a year to improve their health related behaviors.

References

1. Havercamp, SM., Scandlin, D., Roth, M.: Health Disparities among Adults with Developmental Disabilities, Adults with other Disabilities, and Adults not Reporting Disability in North Carolina. *Public Health Reports*, 119(4), 418-426 (2004)
2. Korea Institute for Health and Social Affairs, <https://www.kihasa.re.kr/>
3. Choi, G.J., Kim, K.Y., Lee, D.H., Han, C.H., Choi, S.M.: The Rehabilitation Services Utilization of People with Disabilities in a Rural Area. *Journal of Agricultural Medicine and Community Health*, 36(4), 227-237 (2011)
4. Lauzière, T.A., Chevarie, N., Poirier, M., Utzschneider, A., Bédanger, M.: Effects of an Interdisciplinary Education Program on Hypertension: A Pilot Study. *Canadian Journal of Cardiovascular Nursing*, 23(1), 12-18 (2013)
5. PROGRESS Collaborative Group: Randomized Trial of a Perindopril-based Blood-pressure-lowering Regimen among 6105 Individuals with Previous Stroke or Transient Ischemic Attack. *Lancet*, sep29(358), 1033-1041 (2001)
6. Kerry, SM., Markus HS., Khong TK., Cloud, GC., Tulloch, J., Coster, D., Ibison, J., Oakeshott, P.: Home Blood Pressure Monitoring with Nurse-led Telephone Support among Patients with Hypertension and a History of Stroke: a Community-based Randomized Controlled Trial. *Canadian Medical Association Journal*, Jan 8; 185(1), 23-31 (2013)
7. Parati, G., Pickering, T. G.: Home Blood-pressure Monitoring: US and European Consensus. *Lancet*, 373(9667), 876-878 (2009)
8. Kim, C.B., Kim, M.Y., Lee, J.E., Kim, S.Y., Ahn, H.S.: Are the Interventions of Health Promotion Effective for Hypertension Management? : Systematic Review Approach on International Articles of Nutrition, Exercise, and Health Education. *Proceeding of Conference of Korean Academy of Health Policy and Management*, Nov, 375-376 (2008)
9. Brill, JB.; Lifestyle Intervention Strategies for the Prevention and Treatment of Hypertension: A Review. *American Journal of Lifestyle Medicine*, 5(4), 346-360 (2011)
10. Morisky, DE., Lees, NB., Sharif BA., Liu, KY., Ward, HJ.: Reducing Disparities in Hypertension Control: A Community-Based Hypertension Control Project (CHIP) for an Ethnically Diverse Population. *Health Promotion Practice*, 3(2), 264-275 (2002)
11. Nine, S.L., Lakies, C.L., Jarrett, H.K., Davis, B.A.: Community-based Chronic Disease Management Program for African Americans, *Outcomes Management*, Lippincott Williams & Wilkins, 7(3),106-112 (2003)
12. Duff, E.M., Wilks, R.: Six-month Hypertension Intervention Study. One Year Follow-up. *West Indian Medical Journal*, University of the West Indies, 52(3), 219-222 (2003)
13. Connell, P., Wolfe, C., McKeivitt, C.: Preventing Stroke: a Narrative Review of Community Intervention for Improving Hypertension Control in Black Adults, *Health and Social Care in the Community*, Blackwell, 16(2), 165-187 (2008)
14. Kim, O.R.: Effects of Self Care Program on Hypertensive Control in Hypertensive Patient,

- J Korean Acad Community Health Nurs. 14(4), 568-578 (2003)
15. Park, J.H., Shin, Y.S., Lee, S.Y., Park, J.H.: Antihypertensive Drug Medication Adherence of People with Disabilities and its Affecting Factors in Korea. Journal of Preventive Medicine and Public Health, 40(3), 249-258 (2007)