Effects of Respiratory Infection Prevention Education for Rural Dwelling Elderly on KAP and Social Capital

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Background

- Respiratory infections are the leading cause of death in the elderly, and according to the 2018 cause of death statistics, mortality from pneumonia has been increasing over the past decade(Statistics Korea, 2019).
- The elderly group have a high risk of developing diseases due to physical, emotional and social deterioration due to aging, and above all, they are vulnerable to infectious diseases(Song & Yang, 2015).
- WHO(2008) proposed pharmacological and non-pharmaceutical methods to prevent these infectious diseases. However, the elderly are weaker than the adults in their pharmacological preventing effects, so it is recommended to observe non-pharmaceutical prevention, such as hand washing, personal hygiene, nutrition, exercise, oral health, sleep and rest(Benkouiten, Brouqui, & Gautret, 2014; Qualls et al., 2017).
- The purpose of this study was to applied the respiratory infection prevention program based on Social Cognitive Theory(SCT) developed for rural dwelling elderly in South Korea and to verify its effectiveness

Research Questions

1. Are there any differences in knowledge about respiratory infection prevention, attitudes toward respiratory infection prevention, respiratory infection prevention practices, and social capital between experimental and control groups?
2. Are there any differences in knowledge about respiratory infection prevention, attitudes toward respiratory infection prevention, respiratory infection prevention practices, and social capital across pretest, posttest, 1-month, and 6-month follow-ups?
3. Do the experimental-control group differences vary across pretest, posttest, 1-month, and 6-month follow-ups?

Methods

Study design

- This study is a nonequivalent control group pretest-posttest design.

Table 1. Study Design

	Rural Elderly Residents					
	Pre test	Tx. 1 [a]	Post test	Follow-Up 1 [b]	Tx. 2 [c]	Follow-Up 2 [d]
Exp. group	Y	Y	Y	Y	Y	Y
Cont. group	Y	-	Y	Y	-	Y

[a] Tx. 1: Exposure to the health education program for respiratory infection prevention; [b] Follow-up 1: 1 month after Tx. 1; [c] Tx. 2: Exposure to the reinforcement program; [d] Follow-up 2: 6 months after Tx. 1

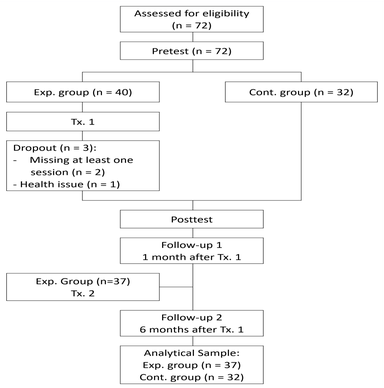

Figure 1. Flow chart of the study

Methods

Participants

- The subjects of this study were aged over 65 years old who live in rural area which was managed by two community health post in C city. A total of 69 participants were divided in to the experimental group (n=37) and the control group (n=32).

Measures & Data Analysis

- The effect of the program measured KAP (Knowledge, Attitude, Practice) and social capital.
- A mixed analysis of variance (mixed ANOVA) was used to test the effectiveness of the educational program.

Intervention

- The educational program was based on social cognitive theory and the contents of the program include cough etiquette, hand washing, oral hygiene and exercise. The program was composed of four weeks of 60 minutes once a week, and a total of 5 sessions were conducted, including orientation, finishing and reinforcement education.
- Data were collected at the baseline (before intervention), post-intervention, first follow-up (1st month) and the second follow-up (6th month).
- The contents of intervention program LINK : https://doi.org/10.3390/ijerph17093057

Results

Table 2. Results of homogeneity testing (N=69)

Characteristics	Categories	Exp. (n = 37)	Cont. (n = 32)	x^2/t	*p*
		n (%)/M ± SD	n (%)/M±SD		
Gender	Male	7 (18.9)	10 (31.3)	1.41	.236
	Female	30 (81.1)	22 (68.8)		
Age		76.62 ± 5.13	74.38 ± 5.70	1.99	.089
Family type	Alone	11 (29.7)	11 (34.4)	0.17	.680
	With family (sons, daughters, grandsons or granddaughters)	26 (70.3)	21 (65.6)		
Education	Uneducated (including elementary school dropouts)	18 (48.6)	9 (28.1)	3.04	.219
	Elementary school graduate	13 (35.1)	16 (50.0)		
	Middle school graduate and over	6 (16.2)	7 (21.9)		
Subjective health status	Not healthy	9 (24.3)	9 (28.1)	0.19	.909
	Ordinary	18 (48.6)	14 (43.8)		
	Healthy	10 (27.0)	9 (28.1)		
Frequency of watching health-related programs	≤1 Tw [d]	5 (13.5)	4 (12.5)	5.41	.176
	2–3 Tw	8 (21.6)	12 (37.5)		
	≥4 Tw	15 (40.5)	14 (43.8)		
	Every day	9 (24.3)	2 (6.2)		
Sources of health information (multiple replies allowed)	News, TV, radio,	32 (71.1)	18 (54.5)		
	Community health posts or health centers, hospitals	41 (91.1)	28 (84.8)		
	Family, friends, neighbors	10 (22.2)	1 (3.0)		
	Others (internet, smartphone, etc.)	5 (11.1)	2 (6.1)		
Attending cough etiquette education program [a]	yes	3 (8.1)	8 (25.0)	3.65	.056
	no	(91.9)	24 (75.0)		
Attending hand washing education program [b]	yes	3 (28.9)	13 (39.4)	1.43	.232
	no	32 (71.1)	20 (60.6)		
Chronic disease (multiple replies allowed)	No disease	8 (17.8)	8 (24.2)		
	Hypertension	30 (66.7)	20 (60.6)		
	Diabetes	10 (22.2)	10 (30.3)		
	Cardiac diseases	5 (11.1)	9 (27.3)		
	Hyperlipidemia	4 (8.9)	4 (12.1)		
	Joint diseases	8 (17.4)	1 (3.0)		
	Others	10 (22.2)	1 (3.0)		
Knowledge of RIP [c]		9.11 ± 1.29	8.84 ± 1.14	0.90	.373
Attitude of RIP		4.44 ± 0.43	4.70 ± 0.36	−2.70	.009
Practice of RIP		3.71 ± 0.51	3.94 ± 0.54	−1.78	.080
Social capital		3.80 ± 0.74	3.95 ± 0.47	−0.97	.335

[a] Fisher's exact test; [b] Multiple responses; [c] Respiratory infection prevention; [d] Tw: Times per week.

Results

Table 2. Descriptive statistics for dependent variables and results of mixed ANOVA analyses (N=69)

Variable	Group	T0 [d]	T1 [e]	T2 [f]	T3 [g]	Source	F	p	η_p^2
		M±SD	M±SD	M±SD	M±SD				
Knowledge about RIP [a]	Exp.(n = 37) [b]	0.91 ± 0.13	0.96 ± 0.05	0.97 ± 0.06	0.98 ± 0.04	G [h]	7.34	.009	0.10
	Cont.(n = 32) [c]	0.88 ± 0.11	0.91 ± 0.10	0.97 ± 0.06	0.91 ± 0.13	T [i]	9.50	<.001	0.12
						G × T [j]	3.09	.038	0.04
Attitudes toward RIP	Exp.(n = 37)	4.44 ± 0.43	4.82 ± 0.32	4.59 ± 0.43	4.94 ± 0.13	G	0.12	.734	0.00
	Cont.(n = 32)	4.70 ± 0.36	4.61 ± 0.34	4.65 ± 0.33	4.77 ± 0.36	T	10.03	<.001	0.13
						G × T	8.03	<.001	0.11
RIP practices	Exp.(n = 37)	3.71 ± 0.51	4.46 ± 0.43	4.31 ± 0.48	4.58 ± 0.29	G	20.56	<.001	0.24
	Cont.(n = 32)	3.94 ± 0.54	4.07 ± 0.48	3.84 ± 0.38	3.98 ± 0.44	T	18.85	<.001	0.22
						G × T	14.10	<.001	0.17
Social Capital	Exp.(n = 37)	3.81 ± 0.74	4.23 ± 0.46	4.21 ± 0.43	4.39 ± 0.33	G	17.95	<.001	0.21
	Cont.(n = 32)	3.95 ± 0.47	3.95 ± 0.47	3.82 ± 0.37	3.72 ± 0.35	T	3.17	.032	0.05
						G × T	10.81	<.001	0.14

[a] RIP: Respiratory infection prevention; [b] Exp.: Experimental group; [c] Cont.: Control group; [d] T0: Pretest; [e] T1: Posttest; [f] T2: 1-month follow-up; [g] T3: 6-month follow-up; [h] G: Group; [i] T: Time; [j] G × T: Group × Time.

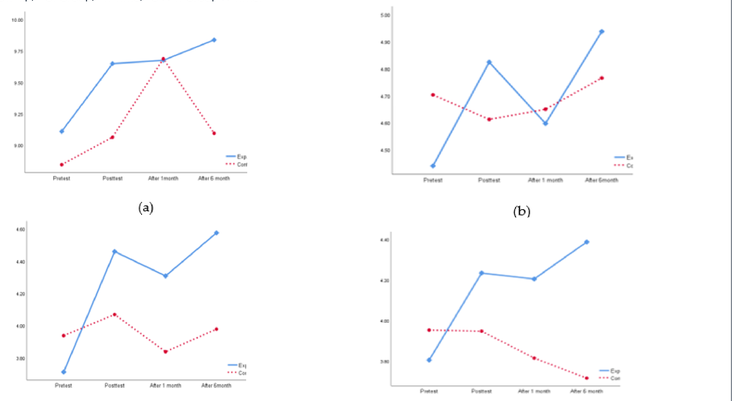

Figure 1. Interaction effects between group and time on: (a) knowledge about RIP; (b) attitudes toward RIP; (c) RIP practices; (d) social capital.

Conclusion

- Knowledge, attitudes, practices for preventing respiratory infections, and Social capital were improved among the elderly residents who participated in the educational program.
- In particular, differences between experimental and control groups over time periods were greater in practices than in knowledge and attitudes, which indicates that the educational program is a highly practical program.
- The program remained effective one month after the intervention, but a reinforcement session extended the program's effects up to six months later.
- However, the six-month follow-up after the intervention may not Be enough to conclude that tis intervention has long-term effectiveness. Therefore, additional follow-ups, such as at one ad two years after the intervention, are required in future studies.
- It is expected that our educational program can be used as an effective intervention, one which can help rural elderly residents Prevent respiratory infections.