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DEMENTIA AWARENESS AND ATTITUDE CHANGE AMONG RESIDENTS IN VULNERABLE RURAL AREAS; PERFORMANCE OF A PILOT PROJECT TO IMPROVE DEMENTIA AWARENESS TO STRENGTHEN ACCESSIBILITY

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ABSTRACT

Purpose:*A pilot project to improve awareness of rural dementia for residents of two vulnerable areas within the jurisdiction was conducted in one county in the rural area, and a study was conducted to confirm the outcome.*

Method: *Before the pilot project, data from the pre-group were gathered, and after its completion, data from the post-group were collected and compared.*

Results: *As a result of the homogeneity test of the pre/post group, there were differences in religion, education level, and occupation.*

In the post- group, 'contact with dementia information' (p=.007) was common, 'intention to participate in dementia prevention program (p=.001)', and 'intention to participate in dementia prevention program in patients with dementia' (p=. 001) was higher, which was statistically significant.

Dementia knowledge, dementia attitude sum, and emotional attitude towards dementia were higher in the post-group, showing a statistically significant difference from the pre-group.

In the post group, the experience and intention to participate in education/events for dementia prevention increased over the past year, and a statistically significant difference was found.

Coclusion: *It is necessary to actively promote residents' lectures and preventive education for senior citizens to improve dementia awareness in the future, and to check specific conditions for participation in cognitive training, tai chi movement, and dementia patient- friend making projects. It can be seen that the development and application of visiting programs to solve the problem of geographical accessibility had a positive effect on the knowledge and attitude of local residents toward dementia. The government's support is needed to continue developing and operating programs that reflect regional characteristics in the future.*

Keywords: Dementia, Knowledge, Attitude, Accessibility.

1. INTRODUCTION

1.1Background

Dementia patients made up 10.2% of Korea's elderly population in 2020[1], and by 2022[2], 17.5%[2] of the country's elderly population was 65 years or older.
In 2018, the government's policy to establish a Dementia Ansim Center in areas where public health centers were established nationwide and to promote community-centered dementia projects was promoted. The elderly living in rural areas with a relatively large proportion of the elderly population and small distribution of community resources are limited in mobility, so visiting the Dementia Ansim Center in person is a difficult problem. Recently, health status has emerged as a social problem due to differences in health equity between regions, and the overall goal of HP 2030 is also set and promoted to improve health equity.[3] The direction of dementia management is also encouraging various initiatives to raise local citizens' awareness and regulations to strengthen their capacity to actively and creatively organize and carry out dementia management programs at the community

level. [4] Fundamentally, treating dementia is still challenging, thus providing patients with care and support as well as managing their health care, such as managing prevention and halting progression by early diagnosis.

It requires management such as services.[5] Residents use dementia management services, and the Dementia Ansim Center's project also needs to present a model that reflects the characteristics of urban and rural areas. Specifically, in order to promote the project to rural residents and increase participation, it is necessary to derive appropriate measures considering accessibility. [6][23] Among the factors affecting the ability of individuals to enter the health care system and receive management and services, geographical factors are important tasks in rural areas.

Prevention and early intervention are the most important due to the nature of the disease [1], and it is important for individuals to take care of their health.

The main goals of public policy are to smoothly supply living convenience facilities necessary forpeople's daily life and to satisfy basic needs. However, despite efforts on the part of the central and localgovernment, the gap between urban and rural areas still remains huge. The Ministry of Land, Infrastructure and Transport has established the national minimum standard for basic living infrastructure. The government's minimum standard is to derive the time to travel to the facility on foot or by vehicle. This suggests the people's access to living infrastructure as a new standard for supply. In previous studies, a diagnosis of vulnerability in basic living infrastructure in rural areas based on spatial big data was attempted. Basic living infrastructure includes basic medical facilities.[7],

In the pilot rural area, dementia prevention programs were mainly operated by the county office, but two of the farthest and widest areas were selected for vulnerable areas that were difficult to participate in among 1 Eup and 7 Myeons to develop rural dementia prevention projects. Area A is located 36.77km from the county office and Area B is 41.55km away. It is challenging to directly visit the Dementia Ansim Center because of its location in the county office. Three health clinics are set up in each of the A and B areas, with an emphasis on senior living facilities, public health sub-center and primary health care post.

The health center visit-type health management project is economically feasible because it promotes the practice of health behavior of the subject, improves self-health management ability, and reduces medical expenses.[8] In the United States, it was evaluated favorably by conducting various promotional activities to visit the primary preventive management service of Cardiovascular disease at the health center.[9]

Active dementia awareness improvement projects were conducted to strengthen accessibility for rural vulnerable areas, and research was conducted to confirm the results.

2. METHODS

2.1 Research Design and Contents of Dementia Prevention Program

The design of this study is a simulated control group pretest-posttest design study, and the participants of the study are residents aged 19 or older who live in two outer areas of the county office. The data collection period is from July to December 2019. Participation of the research subjects was agreed to participate in the pilot project and use of research data. The advantages of this design are to expand the scope of the survey on residents' participation in vulnerable research areas and requirements for follow-up project plans, to converge to the average and prevent test effects.

When calculating the number of samples, the final 225 people were calculated using the G-power program 3.1 based on the correlation coefficients r=0.214, α=0.05, and Power=0.90 in the previous study [10], and a total of 446 people were studied by comparing the two groups.

Table 1: Research Design

Group	Pre-test	Treatment	Poet- test
Exprimental		x	0
Control	0		

Table 2: Contents of dementia prevention program in vulnerable areas

Type	Cognitive training (Enhanced)	Tai Chi Exercise	Making friends (Manito business)	A large-scale community lecture	Visiting a senior citizen center preventive education
	12 weeks/ 2hrs./week	12 weeks/ 1hrs./week	2hrs education 1~2 times ckeck/ week during 4months	1hr/ time	1hr/ time

2.2 Variables

1) Knowledge of dementia The tool developed by the Seoul Metropolitan Dementia Center [11] to measure dementia knowledge consists of 5 questions about the disease, 3 questions about symptoms, 2 questions about treatment, and 2 questions about nursing. The questions were answerable with "yes" or "no," with 1 point awarded for a valid response and 0 points for an incorrect one. As a result, the total score ranges from 0 to 12, and the higher the score, the more knowledge of dementia the respondent has.

The reliability was Cronbach's α=.91 at the time of development. The reliability of this study was Cronbach's α=.90.

2) Dementia attitude It is a tool developed by Cho Hyun-oh [12] to measure dementia attitude, and is divided into 5 questions about emotional attitude and 5 questions about behavioral attitude. The response of this questionnaire consists of Likert scales such as very yes (5 points), generally yes (4 points), just yes (3 points), not at all (2 points), and not at all (1 point), and the higher the score, the more positive the emotional attitude and behavioral attitude, so 5 questions corresponding to the negative attitude were processed. The reliability was Cronbach's α=.67 at the time of development. The reliability of this study was Cronbach's α=.73, and the reliability of the behavioral attitude was Cronbach's α=.69.

3) Characteristics of Interested Information on Dementia It consists of six questions written by the public health center to find out residents' interest in dementia. "How much are you interested in dementia?" and "How much do you think you know about dementia?" were asked on a 5-point scale to confirm interest and subjective perception.
‘Contact with dementia information’, ‘desired information related to dementia’, ‘intention to participate in dementia prevention programs’, and ‘intention to participate in dementia prevention programs in case of dementia patients’ were confirmed as "Yes" and "No."

2.3 Data Collection and Statistics

The data collection was conducted by distributing a questionnaire prepared by the county public health center and completing it in a self-written manner, and the person in charge of the public health center project helped if an explanation was needed. The statistics of the collected data were analyzed with the SPSS 22 program.

3. RESULTS

3.1 General Characteristics of Study Participants

Table 3: General Characteristics of Study Participants

Characteristics	Categories	pre Gr. (n=225)	post Gr. (n=221)	x^2	*p*
		n (%)	n (%)		

Gender *	Male Female	109 (49.5) 111 (50.5)	90 (40.7) 131 (59.3)	3.47	.063
Age*	≤29 30~39 40~49 50~59 60~69 70~79 80~89	12 (5.7) 20 (9.5) 15 (7.1) 31 (14.7) 66 (31.3) 49 (23.2) 18 (8.5)	11 (5.2) 15 (7.1) 13 (6.2) 27 (12.8) 49 (23.2) 59 (28.0) 37 (17.5)	11.18	.083
Religion *	Christianity Catholic Buddhism Have no religion others	32 (14.4) 28 (12.6) 62 (27.9) 98 (44.1) 2 (0.9)	15 (6.9) 23 (10.6) 74 (33.9) 100 (45.9) 6 (2.8)	9.68	.046
Living place *	A Myeon B Myeon Near O-Eup Others Myeon	99 (44.4) 90 (40.4) 22 (9.9) 12 (5.4)	113 (51.1) 81 (36.7) 15 (6.8) 12 (5.4)	2.71	.438
Education level *	Ignorance Elementary school Middle school High school College Others	27 (12.0) 59 (26.6) 33 (14.9) 55 (24.8) 46 (20.7) 2 (0.9)	53 (24.0) 64 (29.0) 23 (10.4) 31 (14.0) 46 (20.8) 3 (1.4)	18.33	.005
Communication route with family *	Telephone Internet Meet and talk No Others	131 (58.2) 1 (0.4) 89 (39.9) 1 (0.4) 1 (0.4)	134 (60.9) 0 (0.0) 79 (35.9) 7 (3.2) 0 (0.0)	7.11	.130
Job *	Yes No	138 (61.9) 85 (38.1)	110 (50.7) 106 (48.8)	6.39	.041
Subjective health *	Very good Good Moderate Bad Very bad	7 (3.1) 60 (26.9) 124 (55.6) 22 (9.9) 10 (4.5)	12 (5.4) 67 (30.3) 112 (50.7) 25 (11.3) 5 (2.3)	4.16	.385

*** Non Responses Include**

In the study group, the results of the group homogeneity verification before and after the program implementation differed in religion, education level, and occupation.(see Table. 3.)

3.2 **Characteristics related to information of interest in dementia**

Table 4: Characteristics related to information of interest in dementia

Characteristics	Categories	pre Gr. (n=225)	post Gr (n=221)	x^2 or t	*p*
		n (%)	n (%)		
Contacting Dementia Information*	Yes No	155 (71.1) 63 (28.9)	180 (82.2) 39 (17.8)	7.51	.007**
Desired information about dementia*	Yes No	160 (76.2) 50 (23.8)	179 (81.7) 40 (18.3)	3.90	.273
Intent to participate in dementia prevention programs*	Yes No	160 (73.4) 57 (26.1)	194 (87.8) 27 (12.2)	14.96	.001
Intent to participate in dementia prevention programs in case of dementia patients*	Yes No	202 (91.4) 19 (8.6)	216 (98.6) 3 (1.4)	12.10	.001**

* Non responses include

** Fisher's exact test

In the post-group, there were statistically significant that it was higher in ‘many contact with dementia information in the post-group’ (p=.007), and ‘the intention to participate in the dementia prevention program’ (p=.001) and ‘if there is a dementia patient, the intention to participate in the dementia prevention program’ (p=.001).(see Table. 4.)

3.3 Knowledge and Attitude for Dementia

Table 5: Knowledge and Attitude for Dementia

Variables	pre Gr. (n=225)	post Gr (n=221)	t	*p*
	M±SD	M±SD		
Knowledge of dementia* Religion Education Job	8.07±2.14	8.63±1.92	 -2.87 -3.73 -2.82	 .004 .000 .005
Total attitude toward dementia* Religion Education Job	3.84±0.60	3.99±0.47	 -2.88 -3.63 -3.18	 .004 .000 .002
Emotional dementia attitude Religion Education Job	3.51±0.81	3.69±0.71	 -2.47 -3.47 -1.16	 .014 .001 .024

Behavioral dementia attitude Religion Education Job	4.19±0.72	4.29±0.57	 -3.18 -2.59 -1.11	 .002 .010 .266

* Non responses include

* Quade Nonparametric ANCOVA

Among the general characteristic variables, the variables with differences in homogeneity were religion, education, and occupation.

The difference between the two groups was confirmed by Quade Nonparametric ANCOVA. There were differences between the two groups when the three variables were treated as covariance. However, behavioral dementia attitudes differed between the two groups only when religion was covariantly treated, and there was no difference between the c group when education and occupational variables were covariantly treated..(see Table. 5.)

3.4 Characteristics of Dementia Ansim Center in O -gun

Table 6: Characteristics of Dementia Ansim Center in O -gun

Characteristics	Categories	pre Gr. (n=225)	post Gr. (n=221)	$x^2(p)$
		n (%)	n (%)	
Do you know if the O-gun Health Center is conducting dementia prevention-related projects (education, patient management, etc.)? *	Yes No	146 (65.8) 76 (34.2)	157 (71.0) 64 (29.0)	1.43 (.261)**
Have you participated in education/events to prevent dementia in the past year? *	Yes No	65 (29.3) 157 (70.7)	125 (56.6) 96 (43.4)	33.65 (<.001)**
Are you willing to participate in a dementia prevention program in the future? *	Yes No	177(80.1) 44 (19.9)	199 (90.0) 22 (10.0)	8.62 (.005)**
If you have dementia patients around you, would you recommend your family and people around you to use the O-gun Dementia Ansim Center? *	Yes No	207 (93.2) 15 (6.8)	215 (97.3) 6 (2.7)	4.01 (.071)**
Do you know where the O-gun Dementia Ansim Center is located? *	Yes No	67 (30.3) 154 (69.7)	104 (47.1) 117 (52.9)	13.01 (<.001)

The characteristics related to the Dementia Ansim Center increased in the post-group under the questions "Have you participated in education/events for dementia prevention over the past year?" (p<.001), "Are you interested in participating in future dementia prevention programs?" (p=.005), and "Do you know where the Dementia Relief Center is located?" (p<.001). (see Table.6.)

3.5 Participation in the operation program of the O-gun Dementia Relief Center and related characteristics (B Group)

Table 7: Participation in the operation program of the O-gun Dementia Relief Center and related characteristics (B Group)

Variables		Cognitive training (Enhanced)	Tai Chi Exercise	Making friends (Manito business)	A large-scale community lecture	Visiting a senior citizen center preventive education
Participation*	Yes No	17 (7.7) 204 (92.3)	19 (8.6) 202 (91.4)	17 (7.7) 204 (92.3)	91 (41.2) 130 (58.8)	102 (46.4) 118 (53.6)
Recommendation of the program*	Health center People Family Others	84 (87.5) 1 (1.0) 0 (0.0) 11 (11.5)	63 (78.8) 5 (6.2) 0 (0.0) 12 (15.0)	58 (73.4) 0 (0.0) 3 (3.8) 18 (22.8)	149 (95.5) 3 (1.9) 2 (1.3) 2 (1.3)	140 (91.5) 4 (2.6) 1 (0.7) 8 (5.2)
Reasons for not participating* (Includes multiple responses)	Lack of time Not interested. It's a long way off. I don't know the program Others	59 (33.9) 19 (10.9) 16 (9.2) 67 (38.5) 30 (17.2)	57 (32.8) 19 (10.9) 18 (10.3) 65 (37.4) 28 (16.1)	75 (41.0) 39 (21.3) 8 (4.4) 47 (25.7) 35 (19.1)	63 (49.6) 14 (11.0) 44 (34.6) 13 (10.2) 4 (3.1)	52 (47.7) 14 (12.8) 4 (3.7) 34 (31.2) 11 (10.1)
A future program Participation *	Yes No	73 (37.1) 124 (62.9)	85 (43.8) 109 (56.2)	45 (23.4) 147 (76.6)	139 (67.1) 68 (32.9)	164 (77.7) 47 (22.3)

They did not participate in the cognitive training (enhancement) program for dementia patients (92.3%). The most common reasons for not participating were because they did not know the program (38.5%), and the most frequent recommendation of health center/medical center staff (87.5%) and relatively high (62.9%) for not participating in the program in the future.

Non-participation (91.4%) in the Tai Chi exercise program to improve cognitive function and physical activity was high.. The most common reason for not participating was because they did not know the program (37.4%). The most common route to learn about the program was the recommendation of health center/medical center staff (78.8%), and relatively high rate of not participating in the program (56.2%).

Non-participation (92.3%) in the dementia patient-volunteer friend making project (manito project) was high. The most common reason for not participating was lack of time (41.0%). The most common route to learn about the program was the recommendation of health center/medical center staff (73.4%), and relatively high rate of not participating in the program (76.6%).

Non-participation (58.8%) was higher in participating in lectures (large-scale) for residents in vulnerable areas to improve dementia awareness. The most common reason for not participating was lack of time (49.6%), and the most common route to learn about the program was the recommendation of health center/medical center staff (95.5%). In the future, participation in the program was relatively high in "yes" (67.1%). Participation in preventive education for senior citizens who visit to improve dementia awareness was high (53.6%), the route to learn about the program was recommended by health center/medical center employees

(91.5%), and the reason for not participating was lack of time (47.7%), and relatively high (77.7%).(see Table.7.)

4. DISCUSSION

It is very important to reflect the needs of local residents in order to pilot dementia prevention projects suitable for rural areas. In the area, a pilot project was planned based on a survey of residents' needs for the dementia project. Within the county area, vulnerable areas that are geographically located far away and have physical limitations in accessing public institutions were selected and various programs were prepared. First, various programs were prepared to improve the dementia awareness and attitude of local residents and participate in prevention programs, and pilot projects were carried out to confirm their performance. The results of the group homogeneity verification before and after the program implementation showed differences in religion, education level, and occupation. It can be said that there is no difference in the classification of religion, but the level of education was often that the posthumous group was uneducated and had no job. In previous studies, it can be estimated that the higher dementia awareness and attitude after the project is the result of the development and application of various programs for vulnerable residents even though the education level [11][13][14] [23] [24]is low.

After the pilot project, many residents had contact with dementia information, intention to participate in dementia prevention programs, and intention to participate in dementia patients, and statistically significant results. The number of cases with desired information related to dementia increased from 76.21% to 81.7% in the post-group, but there was no statistically significant difference. Dementia knowledge and attitude increased to 8.07±2.14, followed by 8.63±1.92, and there was a statistically significant difference between the two groups. However, it was found that the level of residents in vulnerable areas was lower than 8.80±2.11 of residents in rural areas, and the gap between residential areas was confirmed.

The dementia perception of Seoul citizens aged 19 or older using the same tool was similar to 8.6±1.9 points in the survey [11], and higher than the average of 7.5 points in the study. [15]

In previous studies, the lower the age [11] and the higher the education level[11][13][14][16], the higher the score as variables that significantly affect dementia knowledge, and the higher the recognition score was when experiencing dementia information.[13] It is important to make efforts to improve the overall level of dementia awareness and develop accurate knowledge through more systematic and professional awareness improvement projects, while actively providing information to residents and making various attempts.[13] In addition, the education level of rural residents is lower than that of urban residents in urban and rural complexes, so the development and operation of customized dementia-related education programs are required in consideration of the characteristics of rural areas, and a way to acquire knowledge by providing information on dementia management through various channels. This is because the factor that has the greatest influence on dementia knowledge according to the residence is service-based recognition, that is, rural areas are inferior in various areas such as the absence of geographical, economic, and professional manpower in urban areas. [17] The attitude of dementia was 3.51±0.81. The behavioral attitude was 4.19±0.72 in the pre-group, and the post-group was 3.69±0.71, 4.29±0.57, which increased after the project, but showed a statistically significant change only in the area of emotional attitude. The emotional attitude of the residents of the administrative agency in rural areas was 3.76 ±0.78, which was higher than that of the post-group, but the behavioral attitude was 4.24 ±0.56, which was more positive.[6] However, in a study of Jeju citizens using the same tool [18], the results were slightly higher in the post group than the average of emotional attitudes toward dementia at 3.62 (SD=0,90) and the average of behavioral attitudes 4.10 (SD=0.82). The results of applying the dementia prevention program focusing on vulnerable areas were generally positive, but it is judged that it is necessary to more precisely design the analysis between the variables that affect it and verify the results.

In previous studies, it was considered that the variables affecting dementia attitude differed according to gender, age, and educational background, and could vary according to general characteristics such as individual experience, values, and social culture.[12] [17]

There was a significant difference in dementia attitudes depending on the source of dementia information, and it is necessary to develop and apply programs that can provide professional and systematic dementia education and knowledge through professional education because dementia information is positive.[19]

In rural studies, the higher the education level of dementia knowledge in middle-aged and elderly people (p=.017), the dementia attitude depends on age (p<.001), the higher the educational background (p<.001), the more people with jobs, the more positive the dementia attitude was.[20] In the revised Planned Behavior Theory (TPB), it explains that the friendlier the attitude toward behavior, the stronger the intention of behavior, which leads to behavior[21], indicating the possibility of dementia prevention activities, indicating that forming a positive attitude is important.

Emphasizing the need to apply specialized health programs to vulnerable residents emphasizes the expansion of visiting medical services for the elderly who are unable to move to ease restrictions on the use of medical services in rural areas due to long distances and travel time.[22]

In community studies in the United States, visiting services promoting primary prevention of cardiovascular disease in patients with increased risk have shown positive results in community health center (CHC) patients. This outreach program to promote the primary prevention of CVD was viewed positively by this group of CHC patients with elevated CVD risk. In addition, they held generally favorable views towards CHC. [9] This can be understood in the same context as the results of the visit service, although the status of the subject is different. Therefore, it is significant to implement a project that actively utilizes the resources of the local community visiting vulnerable areas in this pilot project.

5. CONCLUSION

This study was conducted to identify the needs of future projects by piloting and evaluating dementia awareness improvement programs for residents in rural vulnerable areas.

There was a difference in the percentage of residents in vulnerable areas participating in individual programs to improve dementia awareness.

The post- group had statistically higher dementia knowledge and emotional dementia attitudes than the pre-group. The post-mortem group had high experience in education related to dementia, recognized the location of the dementia relief center, and had high intention to participate in the future program.

This result shows that dementia-related information acquisition experience, dementia knowledge and attitude, program participation experience, and future participation intention were positive in order to comprehensively judge the results of various programs after the implementation of the program for all residents in vulnerable areas.

It can be said that the applicability of a dementia prevention program that strengthens the accessibility of local residents has been confirmed for residents in vulnerable rural areas. The project promotion strategy was to strengthen accessibility and apply for various new programs to the government so that programs at the county location can easily access residential areas based on human and material resources in vulnerable areas. In the background of the pilot project, the pilot project cost was temporarily allocated to show momentum. The government's continued interest and support are needed so that specialized programs for residents in vulnerable areas can be actively operated by local governments in the future.

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