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Implementing a 1-Night, 2-Day Mental Health Healing Center Program for Dementia Patients and Their Caregivers

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Objectives: This study aimed to assess the effects of a 1-night, 2-day mental health healing center program on the physical stress, autonomic nervous system health, brain activity levels, brain stress, concentration levels, and Patient Health Questionnaire-9 (PHQ-9) scores of dementia patients and their caregivers.

Methods: Forty-eight dementia patients (average age 80 years, 14 males and 34 females) and 48 caregivers (average age 65.23 years, 14 males and 34 females) participated in the program. Pre- and post-assessments were conducted to measure the variables.

Results: Dementia patients experienced reduced physical stress, increased brain activity levels, decreased brain stress, improved concentration levels, and a significant decrease in PHQ-9 scores ($p<0.05$). However, there was a tendency for a decline in autonomic nervous system health among dementia patients. A significant decrease in physical stress was seen in caregivers, but no other significant differences were observed.

Conclusions: While the 1-night, 2-day mental health healing center program did not produce significant changes in the caregivers of dementia patients, it exhibited overall positive effects in dementia patients. Consequently, mental healing programs should be utilized effectively for dementia patients. Furthermore, investigating the significance of ongoing programs for the mental well-being of dementia caregivers is imperative, mirroring the attention given to dementia patient care.

Key Words: Mental health, Dementia, Stress, Caregivers, Patient Health Questionnaire-9.

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I. INTRODUCTION

Caring for individuals with dementia presents formidable challenges, not only for the patients themselves but also for their caregivers, who shoulder the responsibility of providing continuous support and assistance. The complex nature of dementia often results in a multitude of mental health struggles, impacting both patients and caregivers alike. Extensive research has illuminated the profound effect of dementia caregiving on the psychological and physical well-being of caregivers. Pinquart and colleagues[1] emphasized that caregivers experience heightened levels of psychological distress, including symptoms of depression and anxiety, along with diminished subjective well-being and life satisfaction compared to non-caregivers. Additionally, the burden of caregiving extends beyond psychological distress, encompassing poorer physical health outcomes characterized by increased stress-related health problems and chronic illnesses.

Acknowledging the significant challenges encountered by dementia caregivers, researchers have explored various avenues to offer support and alleviate caregiving burdens. One promising avenue involves the utilization of internet-based supportive interventions, as highlighted by Boots and colleagues'[2] systematic review. Their research underscored the effectiveness of internet-based interventions in enhancing caregivers' mental health outcomes, reducing their burden, and augmenting their knowledge and skills in dementia care. These interventions provide caregivers with convenient access to support and resources, potentially overcoming barriers often encountered with traditional in-person services.

Furthermore, peer support interventions, including face-to-face support groups, telephone support, and online networks, have proven effective in improving the emotional well-being of dementia caregivers, as indicated by a study conducted by Guo and colleagues[3]. These interventions foster a sense of understanding, validation, and social connection among caregivers, particularly benefiting those grappling with high levels of stress, isolation, and emotional burden in their caregiving role. The efficacy of peer support is influenced by factors such as the frequency and duration of participation, the quality of peer interactions, and the availability of professional guidance and facilitation.

Despite the growing recognition of the need for supportive interventions for dementia caregivers, a significant gap in research exists regarding health promotion programs tailored to address the needs of both dementia patients and their caregivers. While numerous studies[1,4] have focused on interventions targeting either patients or caregivers individually, exploration of programs catering to the holistic well-being of both groups remains relatively limited. Studies proposing programs of over 8 weeks targeting dementia patients have been conducted. However, continuous participation in programs for dementia patients is challenging, and there is a lack of research demonstrating the effectiveness of evidence-based programs through short-term application[5,6]. Additionally, it is reported that improving the quality of life (QoL) of dementia patients is more important than improving dementia symptoms. Studies have reported that interventions provided to improve the quality of life of dementia patients through reducing depression and stress lead to an increase in their quality of life[7]. Therefore, the aim of this study was to investigate the impact of implementing a 1-night, 2-day mental health healing center program for dementia patients and their caregivers on various parameters including physical stress, autonomic nervous system health, brain activity levels, brain stress, concentration levels, and Patient Health Questionnaire-9 (PHQ-9) scores of both groups, in order to

demonstrate the effectiveness of the short-term program and provide evidence for promoting program participation in various centers offering integrated medical services.

II. METHODS

1. Research approval

This study aimed to investigate the effects of a short-term healing program on dementia patients by reviewing interviews, examinations, and medical records of patients who visited the Department of Korean Neuropsychiatry at Wonkwang University Jangheung Integrative Medical Hospital in Jangheung County in 2023. After obtaining exemption from review by the hospital's Institutional Review Board (IRB) (WKUJIM-202403-003), this case report was conducted in compliance with the procedures.

2. Participants

Forty-eight dementia patients (average age 80 years, 14 males and 34 females) and forty-eight caregivers (average age 65.23 years, 14 males and 34 females) participated in the 1-night, 2-day mental health healing center program at our hospital center.

3. Methods

1) Major assessment tools

Dementia patients and caregivers were divided into two groups, and pre- and post-assessments were conducted to measure physical stress, autonomic nervous system health, brain activity levels, brain stress, concentration levels, and PHQ-9 scores for each group.

The PHQ-9, or Patient Health Questionnaire-9, is a widely employed self-administered diagnostic tool for screening, diagnosing, monitoring, and assessing the severity of depression[8,9] It comprises nine questions that evaluate the presence and intensity of depressive symptoms experienced over the past two weeks. Each question is rated on a scale from 0 to 3, with higher scores indicating more severe depressive symptoms. The total score ranges from 0 to 27, with scores typically categorized as follows: 0～4 (minimal depression), 5～9 (mild depression), 10～14 (moderate depression), 15～19 (moderately severe depression), and 20～27 (severe depression). Due to its brevity, simplicity, and reliability, the PHQ-9 is commonly utilized in clinical practice, research studies, and mental health screenings. Therefore, in this study, the PHQ-9 was employed to gauge the level of depression in both patients and caregivers[8-11].

To assess physical fatigue, autonomic nervous system health, brain activity levels, brain stress, and concentration levels, we utilized the Omnipit Mindcare product to measure brainwaves and pulse signals. This tool employs two-channel electrodes for measuring brainwaves and utilizes a photoplethysmographic pulse wave measurement device to measure peripheral vascular reflection and pulse signals in blood flow.

4. Intervention

The research subjects underwent various programs over a 2-day period including health check-ups, aroma scalp care, forest healing programs, healing programs such as Singing Bowl Yoga, crafts programs like resin art, and integrated medicine therapy programs including full-body sports massage, herbal foot baths, heat therapy, and traditional Korean medicine treatments (abdominal acupuncture, acupuncture). The intervention used in this study was based on the integrated medical service model research presented by the research institution of J Medical Hospital, and an integrated program was constructed accordingly (Appendix 1)[12]. Furthermore, although this program had the nature of an experi-

ential program, it included various medical-based programs to allow for entertainment experiences, educational experiences, escape experiences, and aesthetic experiences[13].

1) Health check-up

On the first day morning, a health check-up program was conducted, including tests for arterial sclerosis using VP-1000 (Colin Co., Japan), brainwaves and pulse measurements using Omnipit Mindcare, active oxygen tests through urine analysis, and InBody 770 body composition analysis, followed by explanations about health-related matters.

2) Aroma scalp care

During the morning of the first day, while some participants underwent health check-ups, others were given the opportunity to select their desired aroma scent. Aroma scalp care massages using aroma oils were then administered to these participants.

3) Forest therapy

During the afternoon of the first day, for approximately 2 hours, participants engaged in forest therapy activities at Jangheung Woodland Metasequoia Forest. These activities, conducted with forest therapy guides, included walking along the metasequoia tree-lined path, taking breaks to enjoy the natural scenery, and participating in recreational activities with patients and their caregivers.

4) Singing Bowl Yoga

On the morning of the second day, for about 1 hour, a program combining singing bowl performances with yoga instruction led by a professional yoga instructor was conducted.

5) Resin art

Following the Singing Bowl Yoga program on the morning of the second day, for approximately 1 hour, patients and caregivers engaged in a craft program involving resin art. Participants used resin to express unspoken sentiments to each other, with caregivers conveying messages to patients and vice versa, by decorating cups.

6) Integrated medicine therapy program

On the afternoon of the second day, an integrated medicine therapy program was conducted. This program included abdominal acupuncture providing the benefits of heat therapy to the entire abdominal area, full-body sports massage for relaxation, full-body heat therapy in a metasequoia heat chamber, acupuncture treatment for pain points, and an herbal foot bath using a decoction of traditional herbal medicine. Each program lasted 30 minutes and was administered to both patients and caregivers.

7) Making Kyungokhwan

As the final program on the afternoon of the second day, a session on traditional Korean medicine education was conducted alongside a program to make Kyungokhwan. Kyungokhwan is made using five medicinal herbs: Ginseng, Baekbokryeong (specific type of ginseng), Sanchi (another name for Panax notoginseng), Boengmil (Millet), and rattan vine (another name for Schisandra chinensis). Participants were guided in preparing this traditional medicine mixture.

5. Evaluation and analysis

Statistical analysis was conducted using SPSS Statistics for Windows Ver. 21.0 (IBM Corp., Armonk, NY, USA). Continuous variables were presented in the format of mean±standard deviation. Frequency analysis was performed for demographic characteristics of dementia patients and caregivers. Additionally, paired t-tests were conducted to evaluate the im-

provement before and after the application of the therapeutic programs. Statistical significance was considered when $p<0.05$ in all cases.

III. RESULTS

1. Demographic analysis

Among the research participants, 29.16% (14 individuals) were male, while 70.84% (34 individuals) were female, indicating a higher proportion of females. Similarly, among the caregivers, 29.16% (14 individuals) were male, and 70.84% (34 individuals) were female, also showing a higher proportion of females. Regarding age distribution, among the patients, the distribution was as follows: 8.33% (4 individuals) in their 60s, 29.17% (14 individuals) in their 70s, 56.25% (27 individuals) in their 80s, and 6.25% (3 individuals) in their 90s, with the highest proportion in their 80s. Among the caregivers, the distribution was as follows: 2.08% (1 individual) in their 30s, 6.25% (3 individuals) in their 40s, 27.08% (13 individuals) in their 50s, 20.83% (10 individuals) in their 60s, 29.17% (14 individuals) in their 70s, and 14.59% (7 individuals) in their 80s, with the highest proportion in their 70s (Table 1).

Table 1. The Characteristics of the Patients

			N	%
Patient	Gender	Male	14	29.16
		Female	34	70.84
	Age	60～69	4	8.33
		70～79	14	29.17
		80～89	27	56.25
		90～99	3	6.25
Caregiver	Gender	Male	14	29.16
		Female	34	70.84
	Age	30～39	1	2.08
		40～49	3	6.25
		50～59	13	27.08
		60～69	10	20.83
		70～79	14	29.17
		80～89	7	14.59

2. The physical stress of dementia patients

During the 1-night, 2-day mental health healing program, dementia patients exhibited a significant decrease in physical stress levels from pre to post-measurement (Table 2).

3. The autonomic nervous system health of dementia patients

Although there was a tendency for a decrease, there was no significant difference observed after participation in the 1-night, 2-day mental health healing program (Table 3).

4. The brain activity levels of dementia patients

Dementia Patient's Brain Activity Levels significantly increased after participating in the 1-night, 2-day mental health healing program (Table 4).

5. The brain stress of dementia patients

There was a significant decrease in Dementia Patient's Brain Stress levels after participating in the 1-night, 2-day mental health healing program (Table 5).

Table 2. Comparison of Differences before and after Intervention in Physical Stress in Patients

Group	Pre test M±SD	Post test M±SD	t	p
Patient	52.92	49.10	2.523	0.016*

M±SD: mean±standard deviation, *$p<0.05$.

Table 3. Comparison of Differences before and after Intervention in Autonomic Nervous System Health in Patients

Group	Pre test M±SD	Post test M±SD	t	p
Patient	5.47	5.51	-0.223	0.824

M±SD: mean±standard deviation.

Table 4. Comparison of Differences before and after Brain Activity Levels in Patients

Group	Pre test M±SD	Post test M±SD	t	p
Patient	27.68	23.57	3.756	0.001**

M±SD: mean±standard deviation, **$p<0.01$.

Table 5. Comparison of Differences before and after Brain Stress in Patients

Group	Pre test M±SD	Post test M±SD	t	p
Patient	8.34	7.93	2.229	0.032*

M±SD: mean±standard deviation, *p<0.05.

Table 6. Comparison of Differences before and after Concentration Level in Patients

Group	Pre test M±SD	Post test M±SD	t	p
Patient	2.94	3.73	-2.355	0.025*

M±SD: mean±standard deviation, *p<0.05.

Table 7. Comparison of Differences before and after PHQ-9 Score in Patients

Group	Pre test M±SD	Post test M±SD	t	p
Patient	5.55	3.41	3.228	0.002**

M±SD: mean±standard deviation, **p<0.01.

Table 8. Comparison of Differences before and after Intervention in Physical Stress in Caregivers

Group	Pre test M±SD	Post test M±SD	t	p
Caregiver	51.58	48.94	2.203	0.034*

M±SD: mean±standard deviation, *p<0.05.

Table 9. Comparison of Differences before and after Intervention in Autonomic Nervous System Health in Caregivers

Group	Pre test M±SD	Post test M±SD	t	p
Caregiver	5.75	5.71	0.221	0.826

M±SD: mean±standard deviation.

Table 10. Comparison of Differences before and after Brain Activity Levels in Caregivers

Group	Pre test M±SD	Post test M±SD	t	p
Caregiver	26.80	26.37	0.283	0.779

M±SD: mean±standard deviation.

Table 11. Comparison of Differences before and after Brain Stress in Caregivers

Group	Pre test M±SD	Post test M±SD	t	p
Caregiver	9.51	7.50	0.788	0.436

M±SD: mean±standard deviation.

Table 12. Comparison of Differences before and after Concentration Level in Caregivers

Group	Pre test M±SD	Post test M±SD	t	p
Caregiver	4.44	4.69	-0.656	0.516

M±SD: mean±standard deviation.

6. The concentration level of dementia patients

There was a significant improvement in dementia patient's concentration level after participating in the 1-night, 2-day mental health healing program (Table 6).

7. The PHQ-9 score of dementia patients

The PHQ-9 score showed a significant decrease after participating in the 1-night, 2-day mental health healing program (Table 7).

8. The physical stress of caregivers

There was a significant decrease in caregiver's physical stress after participating in the 1-night, 2-day mental health healing program (Table 8).

9. Autonomic nervous system health of caregivers

There was no difference in the autonomic nervous system health of dementia patients' caregivers (Table 9).

10. Brain activity levels of caregivers

There was no difference in the brain activity levels of dementia patients' caregivers (Table 10).

11. Brain stress of caregivers

Although there was a tendency for a decrease, there was no significant decrease in the level of stress among dementia patients' caregivers (Table 11).

12. Concentration level of caregivers

There was no significant difference in the concentration level of dementia patients' caregivers (Table 12).

Table 13. Comparison of Differences before and after PHQ-9 Score in Caregivers

Group	Pre test M±SD	Post test M±SD	t	p
Caregiver	2.63	2.18	0.919	0.363

M±SD: mean±standard deviation.

13. Patient Health Questionnaire-9 (PHQ-9) of caregivers

There was no significant difference in the PHQ-9 scores of dementia patients' caregivers (Table 13).

IV. DISCUSSION

Our investigation into the effects of a 1-night, 2-day mental health healing program yielded intriguing results. Notably, dementia patients exhibited a significant reduction in physical stress levels post-program participation, indicating the potential efficacy of such interventions in ameliorating the physiological burden experienced by this population. This finding aligns with previous research highlighting the importance of holistic approaches in addressing the multifaceted challenges associated with dementia care.

However, the outcomes pertaining to caregivers revealed a more nuanced picture. While no significant changes were observed in the autonomic nervous system health, brain activity levels, brain stress, concentration levels, or PHQ-9 scores of caregivers post-program, it is essential to interpret these findings within a broader context. Caregivers of dementia patients often face immense psychological and emotional challenges, yet the complexity of their experiences may not be fully captured by standardized measures such as the PHQ-9[14,15]. Further exploration into the nuanced aspects of caregiver well-being, such as resilience, coping strategies, and perceived social support, could provide valuable insights into the holistic impact of mental health interventions on this population.

Moreover, our study underscores the need for tailored interventions that address the distinct needs of both dementia patients and their caregivers. While the mental health healing program showed promise in mitigating physical stress among patients, its impact on caregivers was less pronounced. This highlights the importance of developing targeted interventions that address the unique challenges faced by caregivers, including caregiver burden, emotional distress, and coping mechanisms same as previous findings[1,16].

Previous study[17] provide an initial framework for delving deeper into the topic and may offer relevant insights into the positive alterations in physical stress among dementia caregivers due to mental health healing programs, akin to those examined in our research. Moreover, Nichols et al.[18] investigated the integration of a dementia caregiver support program within a healthcare system, possibly integrating components targeting mental health support and stress alleviation. Schulz and colleagues[19] suggested that the prevalence of family caregiving for individuals with dementia, along with its accompanying health impacts and potential support strategies, could encompass mental health healing programs.

In our study, a noteworthy finding is that the physical stress of dementia caregivers showed positive changes as a result of the mental health healing program. While the 1-night, 2-day program showed promise in reducing physical stress, its effectiveness may be limited by the persistent psychological burden and stress associated with dementia caregiving. This observation aligns with previous findings[20,21], suggesting that single program participation may not yield significant long-term benefits. Hence, continuous mental health healing programs for caregivers of dementia patients are believed to have a positive effect on their mental well-being. It is con-

sidered imperative to develop and implement ongoing programs for both dementia patients and their caregivers to uphold good mental health and enhance their quality of life, as indicated by prior researches[22,23].

Future research endeavors could explore alternative or supplementary approaches to bolster the effectiveness of mental health interventions for caregivers of dementia patients. Integrating psychoeducational components, caregiver support groups, or resilience-building exercises tailored to the specific needs of this population may enhance the overall efficacy of interventions aimed at promoting caregiver well-being. The findings of this study suggest that even short-term healing programs have positive effects on both dementia patients and their caregivers. Additionally, it was observed that caregivers require more time to recover from physical and mental stress compared to dementia patients. Therefore, this indicates the need for long-term programs tailored for caregivers as well. the mental health healing program may have beneficial effects on certain aspects of well-being for dementia patients, but further research is needed to explore its comprehensive impact and potential limitations.

V. CONCLUSION

The study contributes to the growing body of literature on mental health interventions for dementia patients and their caregivers. While the findings underscore the potential benefits of such interventions for patients' physiological well-being, further research is warranted to develop comprehensive and tailored approaches that address the diverse needs of caregivers in dementia care settings. By prioritizing the holistic well-being of both patients and caregivers, we can strive towards fostering a more supportive and resilient caregiving environment for individuals affected by dementia.

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Appendix 1. Integrated Medical-Based Healing Program for Dementia Patients

Class hour	Duration hour	Day 1		Day 2
1	08:00～09:00			Breakfast
2	09:00～09:30	Registration and process guidance		Healing program 2
3	09:30～10:00	Pre-screening	Aroma	- Singing Bowl Yoga
4	10:00～11:50	Stress assessment Heart rate variability assessment	Scalp massage	Healing program 3 - Resin art
5	11:50～13:00	Lunch		Lunch
6	13:00～17:00	Forest therapy		Integrated medicine therapy - Full-body sports massage - Herbal foot bath - Full-body heat therapy - Korean medicine therapy (cupping, acupuncture) Korean medicine education - making Kyungokhwan
7	17:00～17:40			Post-stress assessment
8	17:40～19:00	Dinner		Satisfaction survey and departure
9	19:00	Lodging and psychological counseling		