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Effects of a Multiple-Intervention Program on the Depressive Tendencies, Social Support, and Life Satisfaction of Older Adults in Taiwan

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ABSTRACT

Purpose: This study evaluated the effectiveness of a multiple-intervention program (MIP) on the life satisfaction, social support, and depressive tendencies of older adults.

Design: A cross-sectional, pretest-posttest design involving a questionnaire survey was adopted.

Methods: Thirty-seven older adults were recruited from 2 daycare centers for an 8-week MIP comprising 60-min sessions conducted once a week. The questionnaire comprised the Short Portable Mental Status Questionnaire, Geriatric Depression Short Form-15 (GDS-SF15), Life Satisfaction Scale (LSS), and Inventory of Social Support Scale (ISSB).

Findings: The participants' average GDS-SF15 score decreased considerably (by 35.3%), their average ISSB score increased from 61.9% to 80.9%, and their average LSS score increased from 48% to 64%.

Conclusions: The outcomes for depressive tendencies, social support, and life satisfaction were measured before and after the intervention, and the participants successfully engaged in the MIP throughout its duration and exhibited improvement. The MIP can serve as a basis for planning group activities for older adults.

Clinical Evidence: The MIP benefits older adults at daycare centers. Incorporating multiple activities into daily care can help increase the diversity, uniqueness, and innovativeness of a daycare center.

Introduction

According to Taiwan's Ministry of Health and Welfare (2021; Ministry of Health and Welfare, 2017), 64.88% of adults aged≥65 years have chronic diseases, the number of people with disabilities is predicted to reach approximately 610 000 by 2026, and the number of people with dementia is predicted to reach approximately 460 000 by 2031. As of April 2021, older adults accounted for 16.35% of Taiwan's population. Taiwan is predicted to become a super-aged society (i.e., >20% of the population being aged≥65 years) by 2027 (Ministry of Health and Welfare, Taiwan, ROC, 2021). Older adults can be defined as individuals aged 65 years or older. Older adults with a decline in physical function encounter difficulties in performing activities of daily living and require caregiving support. Moreover, when older adults are widowed, live alone, or begin to interact with relatives and friends less frequently, they experience changes in their mental states that weaken their perceived social and interpersonal support and their life satisfaction, which often leads them to experience negative emotions (Cheng et al., 2016). An individual is said to have depressive tendencies when they

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regularly experience low moods (eg, sadness and depression), pessimistic or negative thoughts, a sense of helplessness, and a loss of enthusiasm for life or their environment (S. Y. Huang & Sung, 2016). In Taiwan, 27.9% of community-dwelling adults aged≥65 years and 39.3% of older adults living in long-term care centers have depressive tendencies (Hu et al., 2018). Therefore, depressive tendencies are a health concern that warrants consideration.

Research conducted in Taiwan has indicated that group activities positively affect the physical and mental health of older adults. Such activities promote interpersonal interactions and enable older adults to maintain physical and mental balance through social support (C. L. Lo, 2017; Mohd et al., 2019). For example, physical fitness activities can alleviate the depressive tendencies of older adults and increase their life satisfaction (Lung et al., 2016), and reminiscence therapy can increase their sense of life satisfaction and social support (Zanjani et al., 2015). However, most relevant studies conducted in Taiwan have evaluated the effectiveness of individual types of group activities (Lai et al., 2018; Lung et al., 2016; Wen et al., 2015). Numerous institutions that provide intervention activity plans for older adults must consider their labor and financial limitations. Therefore, most institutions prefer to implement single-intervention activities. To explore this topic, the present study investigated the effects of a multiple-intervention program for older adults living in daycare centers in Southern Taiwan. A multiple-intervention program (MIP) was designed with reference to the relevant literature, and the effects of the MIP on the perceived social support, life satisfaction, and depressive tendencies of the older adult participants were evaluated.

Literature Review

Characteristics of daycare centers

In Taiwan, older adult care no longer revolves around long-term care centers; government policies have led to the community care service model. Daycare centers mostly admit older adults with dementia or disabilities. These centers were established to encourage older adults to leave their homes and interact with other members in their community. They provide individual care plans tailored to each individual's degree of dementia and disability and offer self-care assistance to ensure that older adults can maintain autonomy (Lu et al., 2014). In 2014, Taiwan's MHW launched the Taiwan 368 Care Service Program, stipulating that every township must establish at least one daycare center (Ministry of Health and Welfare, 2018). By the end of April 2021, 555 daycare centers had been established. Accordingly, from 2019 to 2020 in Taiwan, the number of older adults with dementia and disabilities in daycare centers increased from 10 018 to 13 619, representing an increase of 35.9% (Ministry of Health and Welfare, 2021). Daycare centers have become an essential service resource for older adults and their families.

Daycare centers often organize various activities to promote the physical and mental well-being of older adults with mild dementia and other forms of functional decline and deterioration. Older adults generally experience limitations in their activities of daily living and social interactions because of illness. Providing guidance to older adults during various activities (eg, mental health workshops, reminiscence therapy, horticultural therapy, and music therapy) can encourage social participation and interpersonal interaction, enhance their self-care ability, and improve their mental health (H. C. Huang & Chang, 2015). The focus of older adult care is not only physical illness but also mental support. Support through either formal or informal social resources can increase life satisfaction by facilitating interpersonal interaction, reducing the frequency with which individuals experience loneliness and negative emotions, and positively affecting individuals' mental health (Mohd et al., 2019).

Relationship between older adults' life satisfaction and depressive tendencies

Life satisfaction is an abstract concept; it involves individuals' inner feelings and is influenced by individuals' perceptions and values (C. P. Wang, 2005). Wen et al. (2016) held art creation classes for

older adults at a long-term care center twice a week. The six art creation sessions that they held focused on introducing art creation and observing participants' facial expressions and emotional changes and their interaction with other participants in class. After the intervention, the participants exhibited reduced depressive emotions, increased social interaction, and an improved quality of life. Accordingly, implementing activities aimed at enhancing understanding and interactive communication skills can help older adults build trusting relationships. Therefore, as caregivers for older adults, nurses can incorporate diverse activities into their care procedures, which can enable them to provide unique, innovative, and professional care to older adults. In addition, Chuang et al.conducted a 4-week storybook-based reminiscence program for 70 older adults aged≥65 years and discovered that the therapy program reduced the participants' depressive tendencies and perceptions (Chuang et al., 2018). Studies involving reminiscence therapy (which entailed sharing childhood, marriage, and childcare experiences) for older adults aged≥65 years have revealed that implementing such therapy programs across different weeks helped alleviate the participants' depressive tendencies and enhanced their life satisfaction (Lai et al., 2018; S. M. Chen et al., 2016). In summary, the effectiveness of reminiscence therapy has been supported by many studies. Reminiscence therapy can promote interpersonal interactions, improve individuals' moods, and increase individuals' life satisfaction.

Relationship between older adults' social support and depressive tendencies

Social supportive behaviors are behaviors that involve providing substantial assistance and various types of support (eg, emotional support, spiritual support, or other types of support) to individuals who encounter difficulties. When older adults receive adequate support from their family and friends, they develop confidence and a sense of achievement (H. H. Chen, 2012). Taso et al. (2014) argued that social support is derived from emotional, instrumental, and informational support; they also contended that social support can improve the life satisfaction of older adults and help them to make emotional adjustments. Notably, Taso et al. (2014) revealed that relative to other older adults, the likelihood of developing depressive tendencies was lower among older adults who were married, had a junior college or higher level of education, perceived their health to be satisfactory, participated in leisure activities at least twice a month, or lived with their spouse or children and received a high level of social support. Lung et al. (2016) conducted a 10-week physical fitness program (comprising warm-up exercises, fitness training, and group games) for 50 older adults (aged≥65 years) with disabilities at a daycare center in central Taiwan; their results indicated that group activities promote interpersonal interaction and reduced negative emotions. C. L. Wang et al. (2017) reported that Swiss ball exercises can be used to reduce the risk of falls among older adult because such exercises can increase the muscle strength, endurance, flexibility, and perceptual balancing ability of older adults. In another study, 29 older adults (aged 79 years on average) with depression participated in an art creation program comprising 6 sessions conducted over 3 weeks; through art painting and creation, the older adults increased their self-esteem (Wen et al., 2015).

Studies involving horticultural therapy (which entailed growing vegetables and flowers and cooking harvested vegetables) for older adults aged≥65 years have reported that a 12-week horticultural therapy program significantly increased the participants' self-esteem, promoted their social interactions, reduced their stress, stabilized their emotions, and increased their attention span (C. L. Lo, 2017; H. Y. Chan et al., 2017). In addition, the depressive symptoms of the older adults who participated in both intervention activities decreased significantly. Makizako et al. (2019) conducted a 20-week movement (ie, aerobic and cardio training) and horticultural therapy program for community-dwelling older adults (≥73 years) in Japan and discovered that movement therapy alleviated the participants' depressive symptoms and could improve their memory for up to 1 year.

According to the preceding literature review, scholars have verified the usefulness of various activities for older adults. Accordingly, we evaluated the effectiveness of an MIP by considering the influence of group dynamics and processes as a mechanism. The effectiveness of physical fitness activities, reminiscence therapy, horticultural therapy, and art creation activities has been supported

by research. For older adults, such interventions increase their sources of social support, reduce their negative emotions, and improve their life satisfaction. Although MIPs are increasingly being implemented, they remain underused; in addition, most relevant studies have focused on individual intervention measures. Engaging in group activities has additional effects on individuals, and including a section detailing the therapeutic outcomes of group activities for older adults is helpful. Therefore, a synthesis of the literature is necessary to emphasize the group-related effects of MIP intervention on depressive tendencies, life satisfaction, and social support of older adults in daycare centers.

Methods

Research design, site, and participants

The participants in this study were recruited from 2 daycare centers located in a rural area of southern Taiwan. This study employed a one-group pretest – posttest design and purposive sampling. The inclusion criteria were as follows: (1) an age of ≥65 years, (2) ability to communicate in Chinese or Taiwanese, (3) a score of 5 to 7 on the Geriatric Depression Scale Short Form (GDS-SF15; ie, mild depressive tendencies), (4) a score of 5 to 10 on the Short Portable Mental Status Questionnaire (ie, normal cognitive function or mild cognitive impairment) (Pfeiffer, 1975), and (5) an expressed willingness to participate in the study and sign the informed consent form. The exclusion criteria were as follows: (1) a score of 8 to 15 on the GDS-SF15 (ie, moderate to severe depressive tendencies), (2) linguistic or visual impairment, (3) a diagnosis of moderate to severe cognitive impairment from a medical practitioner. The recruitment period was from November 2019 to January 2020.

G-power 3.0 was used to calculate the sample size. The sample size required to achieve an α value of .05, statistical power of 0.80, and power of test of .95 was estimated to be 23 participants. Assuming a sample loss rate of 20%, the final required sample size was determined to be approximately 30 participants. Originally, 41 older adults met the inclusion criteria and were willing to participate in the study. However, 2 were hospitalized, and 2 were required to visit the hospital regularly; these 4 candidates were excluded because they were unable to complete the entire research process. Ultimately, 37 participants were enrolled (20 from one daycare center; 17 from the other). During the research period, the older adults at the daycare centers who were not participating in the MIP continued their regular activities and daily routines in an independent activity room without being disturbed.

Research instruments

Structured questionnaires and descriptive charts were used for data collection. A pretest was conducted during the first week of the MIP, and a posttest was conducted after the MIP ended. The structure of the questionnaire was as follows:

(1) Demographic data: The demographic data comprised the participants' age, sex, education level, marital status, living status, economic status, and cognitive level. An open question was used to collect information on the participants' MIP experiences.
(2) Geriatric Depression Short Form-15 (GDS-SF15): This study used the Chinese version of the GDS-SF15 (A. C. M. Chan, 1996). This 15-item scale is scored between 0 and 15. The items are dichotomous. A score of 0 to 4 is considered normal, and scores of 5 to 7, 8 to 11, and 12 to 15 indicate mild, moderate, and severe depressive tendencies, respectively. The Cronbach α was 0.89. The test – retest reliability was 0.85.
(3) Inventory of Socially Supportive Behaviors (ISSB): The focus of the inventory is socially supportive behaviors performed by family (including relatives) and friends (including neighbors) (K. N. Lo, 2001). The ISSB comprises 2 sections: (1) the section on individual types of social support comprises 7 items across 3 dimensions, namely emotional support

(emotional comfort and interaction), integrative social support (sense of belonging, support, and feedback obtained through group interactions), and informational support (provision of information and suggestions). The potential responses to each item are *never*, *sometimes*, and *often*, which correspond to 1, 2, and 3 points, respectively. Total scores on this section range from 7 to 21, with a higher score indicating a higher level of social support. The second section on satisfaction with social support also comprises 7 items and requires respondents to evaluate the forms of social support they receive from family and friends. The potential responses to each item are *dissatisfied*, *neutral*, and *satisfied*, which correspond to 1, 2, and 3 points, respectively. Total scores on this section range from 7 to 21, with a higher score indicating a higher level of satisfaction with social support. The Cronbach α was 0.83.

(4) Life Satisfaction Scale (LSS): The LSS (C. P. Wang, 2005) comprises 2 sections: life concerns and satisfaction with current situation. The 10-item scale is rated on 5-point Likert scale, with total scores ranging from 10 to 50. A higher total score indicates a higher level of life satisfaction. The Cronbach α was 0.75.

Introduction to the MIP. The MIP conducted in the present study was based on a set of care materials for preventing and delaying functional decline that was provided by the Ministry of Health and Welfare (Long-Term Care System, 2017) and the literature on the physical and mental health of older adults (M. L. Chen & Hung, 2015; S. K. L. Lo et al., 2019; S. M. Chen et al., 2016). The first author (investigator) was a registered nurse with experience in conducting guided activities, and at each daycare center, a care attendant was present to provide assistance during the MIP sessions. The MIP followed the predetermined themes and content. At each daycare center, a senior nurse was appointed as the activity counselor. Prior to the activity, the counselors underwent 8 h (4 h/day for 2 days) of free training. The training featured descriptions of courses on horticulture, sports, and reminiscence therapy, and it was held in the activity room of the daycare centers. To ensure that the activities were effective, the counselors were only asked to assist with the activity; they were not required to administer and collect the pretest and posttest questionnaires.

The MIP involved four themes. During the horticultural therapy – themed sessions, participants planted various vegetables at the daycare centers and observed the growth of the plants every day. During the reminiscence therapy – themed sessions, the participants searched for old photographs or toys with their family members and were willing to share their childhood and family experiences at the daycare centers. During the physical exercise – themed sessions, the participants learned about fall prevention and body maintenance. The participants performed towel and Swiss ball exercises individually or in groups, which promoted physical activity and engagement. In addition, during the emotional relief – themed sessions, the participants expressed their feelings by painting various types of paintings (ie, self-portraits and paintings that focused on emotional expressions) and by making and sharing salads or dishes out of the vegetables that they had planted in the first week. The 8 weeks of MIP, and each theme was the focus of the MIP sessions for 2 weeks (Table 1). The MIP did not involve incentives and did not include sessions related to threatening or sensitive issues. By participating in the MIP, the participants were able to independently complete tasks, exchange ideas on familiar topics, and receive emotional support and care.

One 60-minute MIP session was held each week at a fixed time and location. Each session was divided into 3 stages. In the early stage of each session, the participants engaged in a warm-up activity, and the theme and structure of the session were explained (10 min). In the main stage of each session, the participants engaged in a guided discussion and a practical activity (40 min). In the final stage of each session, the participants shared their experiences and were provided feedback and a preview of the next week's activities (10 min). If a participant withdrew from the MIP, no new participant was recruited.

Table 1. Multiple-intervention program(mip).

Week	Program theme	Purpose	Content	Benefit
1	Horticultural therapy—Planting the seeds of happiness	(1) Understanding the content and structure of the program (2) Developing a support group	(1) Introduction to the program and self-introduction (2) Painting flowerpots (3) Planting crown daisy and lettuce seedlings individually and in groups (4) Discussing the meaning of the seedlings, feelings, and how to take care of the seedlings	■ Depressive tendencies ■ Social support
2	Horticultural therapy—Planting fun	(1) Manage problems and empathize through plant cultivation and rehabilitation (2) Promoting interaction with family and peers	(1) Painting flowerpots (2) Planting plants and flowers individually and in groups (3) Sharing and recalling plant-growing experiences and brainstorming strategies for managing and coping with setbacks or failures (4) Observing differences between healthy and injured plants, providing feedback, and learning to cope with low moods (5) Bringing plants home and taking care of them with family	■ Depressive tendencies ■ Social support
3	Reminiscence therapy—Train of memories: Reclaiming childhood memories	(1) Remembering childhood stories (2) Making traditional children's toys to gain confidence.	(1) Looking at childhood photographs (2) Making and playing with traditional children's toys (bamboo guns, tops, marbles, and cards); eating traditional snacks (rice puffs with sesame, candied fruit, and plum cake) (3) Sharing childhood stories	■ Depressive tendencies ■ Life satisfaction
4	Reminiscence therapy—Train of memories: My adorable family	(1) Recognizing the influence of significant others (2) Learning to face experiences with positivity and self-adjust and increase life satisfaction	(1) Sharing wedding stories and customs (2) Family management: Sharing stories about life and parenting through wedding, family, and parenting photographs (3) Emotional family connections: Sharing which people and things mentioned in the "family management" discussion are missed and unforgettable	■ Depressive tendencies ■ Life satisfaction
5	Physical exercise—Fall prevention towel exercise	(1) Learning fall prevention strategies (2) Improving body rhythm and encouraging cooperation	(1) Learning the importance of fall prevention (2) Participating in fall prevention towel exercises individually and in groups, bringing the health education sheet home, and sharing the information with family	■ Depressive tendencies
6	Physical exercise—Swiss Ball exercise	(1) Improving body rhythm and encouraging cooperation	(1) Learning daily body maintenance and methods to prevent sarcopenia (2) Participating in Swiss Ball exercises individually and in groups with instructor guidance	■ Depressive tendencies
7	Emotional relief—Painting feelings	(1) Learning how different feelings affect an individual's body and surroundings (2) Promoting emotional expression and positive emotions	(1) Talking about and identifying emotions (2) Drawing your facial expression and explanation feelings (3) Creating facial expressions that express different emotions and discussing which feelings the facial expressions elicit in others	■ Depressive tendencies ■ Life satisfaction ■ Social support

(*Continued*)

Table 1. (Continued).

Week	Program theme	Purpose	Content	Benefit
8	Emotional relief—Food happiness	(1) Integrating life experiences and increasing self-worth (2) Providing feedback to and expressing goodwill toward others	(1) Making a salad (2) Exhibiting achievements: (1) Displaying the plants grown at the center and the plants that were taken home (2) Reflecting on the program through a slideshow and sharing thoughts on participating in the program (1) Completing posttest questionnaires	■ Depressive tendencies ■ Life satisfaction ■ Social support

Data analysis

The data were analyzed using SPSS 22.0. The descriptive data are presented herein as frequency distributions, percentages, means, and standard deviations. For inferential statistics, a chi-square test was conducted to analyze the participants' demographic data, and an independent-samples *t*-test and one-way analysis of variance were performed to examine the differences among the participants from each daycare center with respect to their demographic data and their GDS-SF15, LSS, and ISSB scores. Paired-sample *t* tests were performed to investigate the differences in pretest and posttest of participants with different demographic characteristics. Finally, a Pearson correlation analysis was performed to identify the correlations among the 3 variables (ie, depression tendencies, social support, and life satisfaction).

Results

Analysis of demographic variables

The average attendance rate for participants was 100%. The average age of the participants was 78.45 years. Among the participants, there were more women than men, more widowed individuals than non-widowed individuals, more individuals who lived with their family, more individuals with an average income of <NT$5000 per month than without such income, more individuals with hypertension than without hypertension, and more individuals with normal cognitive function than with abnormal cognitive function (Table 2). Regarding the inferential statistics, the independent-samples *t*-test and one-way analysis of variance revealed nonsignificant differences in depressive tendencies and life satisfaction among the participants with different demographic characteristics. Regarding the relationship between demographic characteristics and social support, significant differences in social support were identified between participants with different marital statuses and number of comorbidities ($P < .05$). Married participants with 5 to 6 comorbidities received the highest level of social support.

Effects of the MIP

Changes in depressive tendencies

The mean pretest and posttest GDS-SF15 scores were 6.14 ± 0.89 and 3.97 ± 0.93, respectively, reflecting an average decrease of 35.3% over the intervention period. The number of participants with mild depressive tendencies decreased from 37 to 9 (24.3%), and the number of participants with no depressive tendencies increased to 28 (75.7%). The results of the paired-sample *t* test indicated that the mean GDS-SF15 score decreased significantly during the intervention period ($t = 16.44$, $P = .001$). The formula for calculating the effectiveness of the program is presented in Table 3.

Table 2. Demographic data ($N = 37$).

Variable	Option	Sample size (N)	Percentage (%)	Mean ± Standard deviation (M ± SD)
Age	65–74 y	11	29.8	78.45±6.70
	75–84 y	16	43.2	
	≥85 y	10	27.0	
Sex	Male	14	37.8	
	Female	23	62.2	
Education level	Never been to school	11	29.8	
	Elementary school	15	40.5	
	Junior high school	2	5.4	
	Senior or vocational high school	6	16.2	
	Junior college or above	3	8.1	
Marital status	Married	12	32.4	
	Widowed	25	67.6	
Living status	Living alone	5	13.5	
	Living with a spouse	4	10.8	
	Living with family	27	73.0	
	Living with children alternately	1	2.7	
Economic status	≤NT$5000/month	19	51.4	
	NT$5001-NT$10 000/month	12	32.4	
	NT$10 001-NT$15 000/month	2	5.4	
	≥NT$20 001/month	4	10.8	
Diseases (Multiple choice)	Cancer	2	5.4	
	Diabetes	11	29.7	
	Hypertension	28	75.7	
	Eye disease	17	45.9	
	Heart disease	2	59.5	
	Chest and lung disease	4	10.8	
	Hepatobiliary and gastrointestinal disease	2	5.4	
	Kidney and urinary disease	8	21.6	
	Orthopedic disease	16	43.2	
Number of chronic diseases	1	4	10.8	
	2	12	32.4	
	3	9	24.3	
	4	9	24.3	
	5	0	0	
	6	3	8.1	
Mental status	Normal	28	75.7	
	Mild cognitive impairment	9	24.3	

Note: Short Portable Mental Status Questionnaire was used to evaluate mental status.

Table 3. Pretest and Posttest of MIP ($N = 37$).

Variable	Mean ± standard deviation (M ± SD)	Effectiveness	t value	p value
Depressive tendencies				
Pretest	6.14±0.89	35.3%		
Posttest	3.97±0.93		16.44	.001***
Life satisfaction				
Pretest	24.84±5.29	16%		
Posttest	32.95±6.00		−8.11	.001***
Satisfaction with social support				
Pretest	13.14±3.03	19%		
Posttest	17.22±2.30		−8.48	.001***

Note: (1) Paired-sample t tests were conducted for analysis.
(2) Effectiveness = (Mean posttest score) − (Mean pretest score)/(Mean pretest score); $P < .001$***.

Table 4. Correlation analysis of GDS-SF15, LSS, and ISSB scores ($N = 37$).

Variable	Depressive tendencies	Social support
Social support	−.221	
Life satisfaction	−.445***	.466***

Note: $P < .001$***.

Changes in life satisfaction

The mean pretest and posttest LSS scores were 24.84 ± 5.29 (48%) and 32.95 ± 6.00 (64%), respectively, reflecting an average increase of 16%. The results of the paired-sample t test indicated that the mean life satisfaction score increased significantly during the intervention period ($t = -8.11$, $P = .001$; Table 3).

Changes in social support

Regarding the 3 social support dimensions, the posttest results indicated that participants' main sources of emotional and integrative social support were their friends (4.49 ± 0.80 and 7.24 ± 0.95, respectively) rather than their families (4.05 ± 10.85 and 5.59 ± 1.24, respectively). However, the participants' main sources of informational support were their families (4.95 ± 0.78) rather than their friends (4.57 ± 0.60). By the end of the MIP, the participants' average scores for support from family and friends increased in all dimensions. Emotional support and integrative social support were still mainly provided by their friends, and informational support was still mainly provided by their families. The results of the paired-sample t test indicated that the mean scores for family and friends in the emotional support and integrative social support dimensions changed significantly during the intervention period ($t = -4.31$, $P < .05$; $t = -5.92$, $P < .05$). However, in the informational support dimension, although the mean score for family changed significantly ($t = -3.85$, $P < .05$), the mean score for friends did not. Regarding satisfaction with social support, the mean pretest and posttest scores were 13.14 ± 3.03 (61.9%) and 17.22 ± 2.30 (80.9%), respectively. The participants' satisfaction with social support increased by 19% during the intervention period, reflecting a significant change ($t = -8.48$, $P < .05$; Table 3).

Correlation analysis of GDS-SF15, LSS, and ISSB scores

The Pearson correlation analysis revealed a nonsignificant negative correlation between GDS-SF15 scores and ISSB scores ($r = -0.221$, $P = .189$). Depression (GDS-SF15) was negatively correlated with life satisfaction (LSS); that is, a higher level of life satisfaction is associated with less depression tendencies). A significant negative correlation between GDS-SF15 scores and LSS scores ($r = -0.445$, $P = .006$) and a significant positive correlation between ISSB scores and LSS scores ($r = 0.466$, $P = .004$; Table 4) were revealed.

Discussion

Effect of the MIP on depressive tendencies

After the MIP, the participants reflected on how they cultivated positive emotions through the horticultural therapy – themed sessions. With respect to the final stage of each session, the participants made statements such as "We grew vegetables and flowers together. How fun!" and "Watching the vegetables that I planted grow made me happy." These results are consistent with those of the study by H. Y. Chan et al. (2017) in which horticultural therapy was determined to be effective in alleviating symptoms of depression in older adults. During the emotional relief – themed sessions, the participants alleviated their negative emotions through interaction-based activities such as guided drawing

activities, self-portrait drawing sessions, and rhythmic exercises. With respect to these sessions, a participant noted that "My drawing of my angry face is really ugly" and "Watching you draw your face with a smile cheered me up." These activities helped the older adults understand that everyone has their own concerns and emotions. In addition, the activities taught the older adults that they should attempt to understand how different emotions affect themselves and their peers, respect and understand the feelings of others, and consider various aspects of their lives from a healthy and positive perspective. The rhythmic exercise sessions highlighted the importance of fall prevention. Another participant said that "When you walk slowly, you will not fall" and that "Using a towel and a ball to exercise is so much fun!" When the older adults were searching for childhood photos and playing with traditional toys with their families, they were better able to understand their emotions and discuss these emotions with their families. This finding was consistent with the findings of a study by Lai et al. (2018) in which older adults were able to express their emotions when they were reminiscing about their lives.

Effect of the MIP on life satisfaction

The evidence indicates that the participants' life satisfaction increased significantly (by 16%) during the MIP intervention. Similar results were reported in S. M. Chen et al. (2016), in which a mixed 8-week reminiscence therapy program involving toys and photos was held at a daycare center. The MIP incorporated the local culture, the participants' life experiences, and a nostalgic atmosphere, thereby enabling the older adults to reflect on their past. In the final stage of each session, the participants shared their experiences with the MIP. One participant said, "It turns out that everyone played marbles and milk caps when they were young. I miss those days so much!" Another participant said, "It feels great that people want to listen to the story of how I got married!" Regarding their experiences growing plants, some participants indicated that watching their vegetable seedlings grow was a similar experience to watching their children grow up. The participants' paintings and belongings were displayed on bulletin boards located in the public spaces of the daycare centers; this strengthened the participants' sense of achievement and enabled them to recognize their own value, feel encouraged, and receive positive feedback. When the participants observed the paintings of their facial expressions and reviewed the moments when they expressed delight, anger, sorrow, and joy on their faces, some of them discovered that they rarely displayed joyful expressions. On the basis of their introspection, they reasoned that this could have resulted from their pursuit of greater quality of life when they were young. Subjected to heavy financial burdens, they had to work hard. Nevertheless, when the participants shared their childhood and marriage experiences, some realized that they were blessed. After all, an individual may be worse off than some but better off than many others. When the participants shared their completed self-portrait with others, they also discovered the positive aspects of their appearance. A similar result was reported by Wen et al. (2016). During the creation of their paintings and after completing them, the participants received encouragement and positive feedback from the instructors and other participants.

Some of the participants' family members reported that the participants had shared details about the activities when they returned home. The family members requested more information regarding the content of the MIP and expressed their desire to continue the activities with the participants at home.

Effective of the MIP on perceived social support

The participants' overall satisfaction with their social support increased by 19% during the intervention period. Furthermore, the participants gained emotional and integrative social support from their peers. During the final stage of each activity session, some of the participants felt that they were able to support each other during the MIP activities, especially during drawing and play activities. By participating in the program together, the participants shared their experiences and feelings with

and cared for each other. Interacting with others led the participants to feel that others were concerned for and cared about them, which increased their perceived social support. During group-based activities, the participants shared their experiences and feelings with each other and cared for one another. Their interactions with others helped them to realize that others were concerned and cared about them. They also discovered that they had more time to interact with their family and peers at the center after the activities, which made them feel valued. This result was consistent with that of a study by C. L. Lo (2017) in which participating in group activities helped older adults engage in meaningful interpersonal interactions and gain peer support. The activities corresponding to the 4 themes of the MIP increased the frequency with which the participants interacted with their peers and encouraged them to receive feedback.

The results of the questionnaire survey indicated that family was the participants' main source of informational support. The activities that required the participants to take care of plants at home and search for photos from their youth with their families stimulated conversation and encouraged interactions with their families. This finding is consistent with the findings of the study by S. K. L. Lo et al. (2019) in which horticultural therapy effectively reduced stress and anxiety in older adults. Accordingly, the results of this study support the claim that MIPs can increase social support and positively affect older adults' interpersonal interactions.

Effects of the MIP on depressive tendencies, life satisfaction, and social support

In this study, an 8-week MIP was designed with reference to the relevant literature. The themes of the program were changed every 2 weeks, and through their exposure to sessions with different themes, the participants had fun and meaningful experiences with their peers. Depressive tendencies were significantly and negatively correlated with life satisfaction; when individuals are more satisfied with their lives, they are less likely to develop depressive tendencies. Therefore, the life satisfaction of older adults must be improved. Social support was significantly and positively correlated with life satisfaction, indicating that a higher level of social support led to a higher level of life satisfaction. This finding is consistent with the findings of C. L. Lo (2017), who reported that older adults can enhance their interpersonal relationships, alleviate their depressive symptoms, and increase their self-esteem by participating in various activities.

During the MIP, the participants interacted the most during the horticultural and reminiscence therapy sessions. When the participants could exhibit their achievements, they felt empowered to complete tasks (including washing vegetables and cooking) independently, which helped them thoroughly enjoy the activities. In addition, the participants ate the salads they made together and, in doing so, gained a sense of fulfillment. Furthermore, each participant had their own moveable bulletin board to which they could attach their traditional toys and old photos. They could view the bulletin boards at any time, reminisce about the past, and share their emotions and thoughts with others. This enhanced their confidence and made them feel valued. Many of the participants expressed that they wished such programs could be held often to help them spend more quality time with their peers. The findings of the present study provide valuable information that can help community health nurses undergoing on-the-job continuing education to design diverse group activity courses, which can enable them to improve their practical skills and activity leadership in the context of caregiving for older adults. Notably, the present study revealed that older adults residing in institutions respond well to the content of MIP activities and thus experience improved physical and mental health as a result.

Limitations and Recommendations

This study has some limitations. First, this study enrolled only 37 older adult participants from 2 daycare centers in southern Taiwan and adopted a one-group pretest – posttest design; no control group was included for comparison. In addition, the duration of the MIP was 8 weeks. Due to time constraints, the long-term effectiveness of the MIP could not be evaluated. In

subsequent studies, the MIP should be conducted repeatedly, and its results should be tracked over time. They should also recruit participants from different types of institutions to obtain more robust results. Regarding the practical implications of the findings of this study, daycare center personnel should participate in regular on-the-job training to strengthen their abilities to organize and host activities for older adults and to develop fun and engaging activities and interventions. Furthermore, community health nurses can integrate multiple activities into their care practice and daily care plans for older adults, which can enable them to provide unique, innovative, and professional care to older adults and improve their caregiving skills and ability to interact with older adults.

Conclusion

Older adults generally live a lonely and monotonous life. Therefore, daycare personnel should organize various activities for older adults to promote their physical and mental health. Unlike most daycare centers, we applied a different intervention theme every 2 weeks. The activity sessions were based on the participants' preferences, and each session lasted approximately 2 hours. Counselors provided assistance during the activities to increase their effectiveness. This implementation model also enabled the participants to discover their self-worth, enhance their interpersonal interactions, and reduce their depressive tendencies, thereby improving their quality of life. The MIP enhanced the participants' connections with their families, enabling them to continue conversing about the activities they participated in when they returned home. After the participants underwent the MIP intervention, their depressive tendencies decreased, and their life satisfaction and social support increased considerably. Community health nurses can integrate multiple activities into their care practice and caregiving plans for older adults, which can enable them to provide unique, innovative, and professional care to older adults and enhance their caregiving skills and ability to interact with older adults. The proposed MIP can serve as a reference for professional activity organizers who plan activities for daycare centers.

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