Effect of a multi-disciplinary active aging intervention among community elders

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Abstract

Background: Active aging has been the paradigm of the old-age lifestyle. We aimed to investigate the efficacy of a multi-disciplinary intervention program in community-based elderly.

Methods: We conducted a 2-arm trial comparing the effectiveness between the study group and the control group. The intervention contents included active aging concepts and preparation, physical activity, health care management, cognitive training, emotional awareness and coping skills, family relationship and resilience, and internet use. A questionnaire tapping into the constructs of the expanded healthy life, mental health, social participation, and active aging was administered at baseline, 7th week, and 19th week.

Results: The generalized estimating equations analysis revealed that the study group exhibited significant improvements in healthy life, mental health, social participation, and active aging compared with the control group ($P < .001$).

Conclusions: This study provided a good evidence supporting the effectiveness of a multi-disciplinary intervention program in improving the cognition of healthy life, mental health status, social participation activities, and active aging. A promotion of similar intervention is recommended.

Abbreviations: AVE = average variance extracted, CAWC = community aged well-being class, GEE = generalized estimating equations, GFI = goodness of fit index, RCT = randomized controlled trial, WHO = World Health Organization.

Keywords: active aging, community intervention, elder

1. Introduction

Despite differences in population structure and aging velocity across counties, rapid population aging was a worldwide phenomenon in this century. Many countries, including Japan, the United States, Australia, and most of the European countries, have populations in which more than 14% of them are older than 65 years. Taiwan is also an aging society in the "Aged Society"

status. How to decrease the negative effects in the aging society era and increase the aged adults' social value are the most important issues for the government, society, and every individual to overcome. The concept of successful aging first appeared in the 1960s, and previous studies put forward viewpoints such as morale, well-being, or life satisfaction.[1] For a positive experience of the human aging process, according to the multi-faceted definition of successful aging, the elderly needs to maintain mental health and normal cognitive function, actively participate in society, and have good interpersonal relationships in addition to physical health.[2,3] Following successful aging, the optimizing opportunities for health, social participation, and security life was adopted by the World Health Organization (WHO) as "active aging" in order to enhance the quality of life as people aged.[4] Active aging as a lifelong process shaped by several factors that, alone and acting together, highlighted by the WHO and voiced by older people and those who serve elders in the urban areas: social participation; respect and social inclusion; civic participation and employment; community support and health services; communication and information; housing, transportation; and outdoor spaces and buildings.[5] The concept of active aging helps the elderly to enjoy their late lifetime and offer daily goods and arrangements when required. From the viewpoint of active aging, health promotion activity practice (such as health responsibility, exercise, adequate nutrition, pressure management, social support, and self-realization) is related to individual health.[6]

Several studies have indicated that the social activities attendance of aged adults during their retired life could wipe off their lonesome feelings and help them achieve a higher quality of life.[7,8] A Taiwan study introducing the program that provides various types of dynamic and sedentary activities for elders at

community-based care centers revealed that encouraging exercise was essential to achieve their goal of health promotion.[9] Other studies showed that effective exercises combined with comprehensive and prospective intervention for daily life activities favor the changing lifestyles, healthy behaviors, health promotion, and community capacity among the elderly.[7,10–16] Health promotion enables people to augment their health and shelters a wide range of social and environmental interventions to benefit and protect individual health and quality of life.[17] Community capacity promotion is about promoting the capacity to develop and implement solutions that help physical, social, economic, and environmental practices.[18] The WHO has defined mental health as a state of well-being in which people realize their potentials in coping with life stress, work productively, and contribute to the community.[7]

Group intervention in the community offers a cost-effective alternative for individual intervention by the health education theory. Most community centers in Taiwan provide individual life care services, and it remains unclear if a group intervention program potentially benefits healthy life in the elderly concerning cost-effectiveness. One previous study adopted the theory of health education had demonstrated that group-based intervention had significantly more health benefits than individual-based intervention in reducing secondhand smoke exposure in a randomized controlled trial (RCT).[10] Similar findings were reported in 2 RCTs examining the effectiveness of counseling services in the elderly for hypertension control and reducing social isolation and loneliness in community-dwelling elders.[19,20]

This study hypothesizes that intervention by multi-disciplinary approach effectively enhances healthy life, mental health, social participation, active aging of the elderly. The purposes of this study were: to set up a multi-disciplinary maintenance program aiming for enhancing healthy life, mental health, social participation, active aging for community aged people; to evaluate the effectiveness of the intervention program for active aging compared with control.

2. Methods

2.1. Study framework and hypotheses

The conceptual basis of this empirical study - a multi-disciplinary program for enhancing healthy life, mental health, social participation, and active aging, was built up for the intervention of the elderly in the study community. We carried out the intervention program under the name of Community Aged Well-being Class (CAWC) and evaluated the physical, mental, social, and active agings using a set of questionnaires. The study framework is shown in Figure 1.

The CAWC included physical activity, emotional health, and cognitive function training, and social participation. We raised the following hypotheses:

H1: CAWC improves the healthy life of the elderly
H2: CAWC improves the mental health of the elderly
H3: CAWC improves the social participation of the elderly
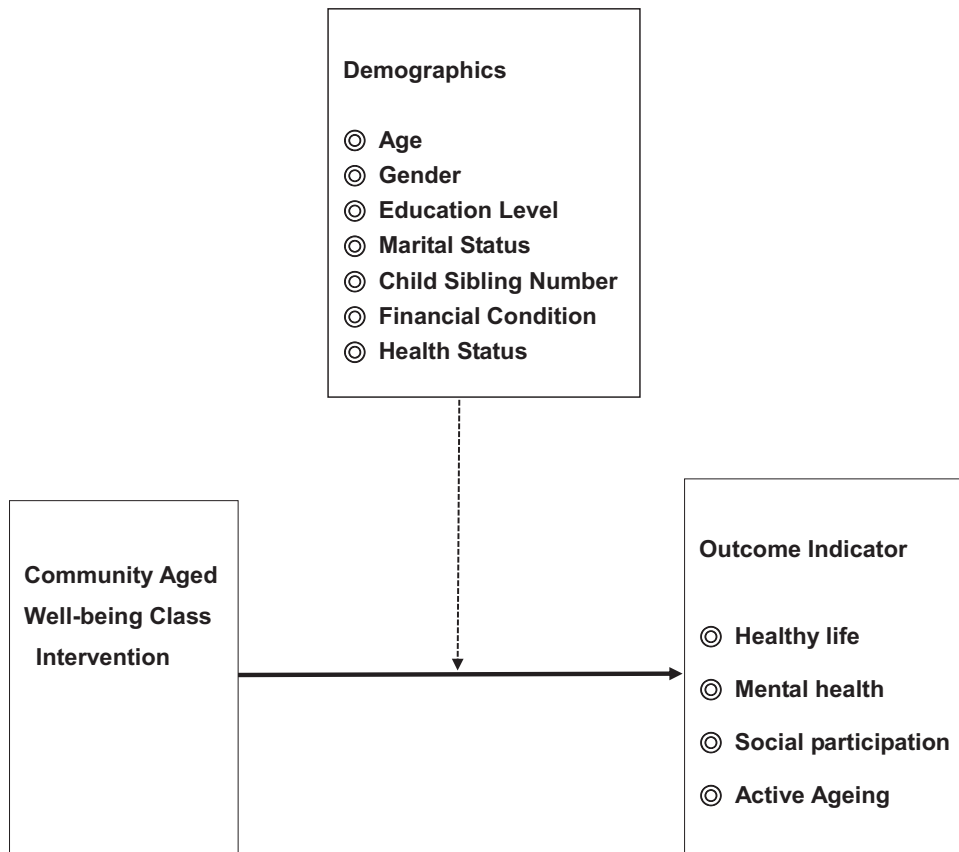H4: CAWC improves the active aging of the elderly

Figure 1. Study Framework.

2.2. Study design and sampling

This study was conducted in a community from September 1, 2019 through January 20, 2020. The elderly participants were recruited by the community administrators. The potential participants were 682 elderly over 65 years living in the Datongli community, Guishan District, Taoyuan City. This study required 80 participants in each arm to yield 85% of power to detect the group difference presuming an effect size of 0.8[21] and a 5% significance level. Considering an attrition rate of 10% and a scrapped paper rate of 10%, each group's appropriate number of participants would be 90 at least. Participants were randomly assigned to the study group and the control group through random numbers. Finally, 195 elderly were collected, of whom 95 were allocated to the study group and 100 to the control group. Six participants (6%) dropped out from the study group, and 8 subjects (8%) dropped out from the control group. The dropout rate did not differ significantly between the 2 groups. We adopted the intent-to-treat approach for statistical analysis. For the missing value, the multiple imputations method was used to the gain the average scores.

2.3. Community aged well-being class

Two senior educators designed 10 courses (600 minutes) for the CAWC with 60 minutes per course and 2 courses per week for 5 weeks totally. The courses were delivered by a physician, health educator, social worker, and fitness instructor to the study group participants. The control group participants maintained their regular daily activities at home but had access to the active aging program booklets and gifts while attending the community-organized birthday parties. The study design and participant flowchart are described in Figure 2.

The components of CAWC include:

- Concept of aging: the courses introduced the nature of the aging process, the value of aged life, enjoy aging living, and active aging life.
- Physical activity: This unit offered health promotion knowledge of chronic diseases prevention and management, easy physical exercise training, and exercising. The contents included eyes-hands coordination training, causes and prevention of chronic diseases, appropriate medication administration, snooker game exercise, and new aspects of health promotion for aging.
- Emotional health and cognitive function training: the courses provided positive emotion, attention and concentration training activities, memory retaining presentation, and music therapy.
- Social participation: the courses and activities focused on personal inter-relationship and family member relationship awareness, appreciation and affection expressing, and community social welfare activity involvement.

All intervention classes were video-recorded and participants were asked to complete reminder questions every week online before class began to monitor their effort of the assigned homework. The questions were related to the frequencies of engaging in physical activity, positive emotion, social participation, and other active aging themes in the past week.

2.4. Assessments

Each participant filled out self-report questionnaires at the time of recruitment (pre-test). The study group was intervened, and the control group maintained their regular daily activities as described in the previous section. Both groups filled out the same questionnaires at the first week (pre-test), 7th week (post-test) and 19th week (post-post-test) during this study.

Constructs of the questionnaires used in this study were examined by 4 experts – a health educator, psychologist, social worker, and fitness instructor for content validity and reliability. The questionnaires were pretested and conformably revised before they were formally applied. The scoring standards are as followings: 4 points = very applicable, 3 points = applicable, 2 points = not applicable, 1 point = very inapplicable. In terms of text clarity: 4 points = very clear, 3 points = clear, 2 points = unclear, 1 point = very unclear were encountered.[22] The Content Validity Index for each item ranged from 0.83 to 0.92 (>0.8), indicating that the questionnaire had good content validity.

The demographic variables collected and questionnaires used in this study were:

- Demographics: age (65-69, 70-74, ≥75), gender (male, female), education (education level including illiterate or elementary school, junior high school, and senior high school and above), marital status (no spouse including single and widow, having spouse), current sibling number (0, 1-2, ≥3), financial condition (good above, fare, low), and health status (good, rather well, fare, poor) by self-rated.
- Healthy life: The healthy life scale was adopted from Walker et al[23] A total of 14 items, including regular diet and food nutrition, healthy literacy (such as blood sugar and cholesterol measure within the last year, tooth hygiene), exercise and outdoor activities, were self-rated by the participants from never to always (score 1-4) and the summation of the scores of the 14 items is the total score.
- Mental health: The self-rated 5-item Brief Symptom Rating Scale (5) was adopted from Lee.[24] The scale contains 5 psychopathology items, including feeling tense or keyed up; feeling blue; feeling easily annoyed or irritated; feeling inferior to others, and trouble falling asleep. Each item was measured as none to very severe (score 0-4), and the total score is the summation of all items.
- Social and civic participation: The self-rated Social and Civic Participation Scale was adopted from Zheng.[25] The scale contains 6 items, including entertainment activity, public welfare service, religious, and community activity. Each item is rated no or yes (score 0-1), and the summation of all items is the total score.
- Active aging: The self-rated Active Aging Scale was adopted from Lin.[26] This questionnaire contains 15 items covering self-daily life management, cognition of aging process and self-esteem, physical and psychological maintenance, family and friend relationship, economic and environment safety. Each item was measured from entirely disagree to entirely agree (score 1-5), and the summation of all items is the total score.

2.5. Data analysis

This study mainly used experimental design and questionnaires to obtain the required original data. In the process of data collection, the subjects' consent has been obtained, and they will be randomly assigned to the study group and the control group. In the process of data cleaning, incomplete, contain duplicates or wrong data have been deleted. This article uses confirmatory factor analysis to confirm the reliability and validity of the research factors.
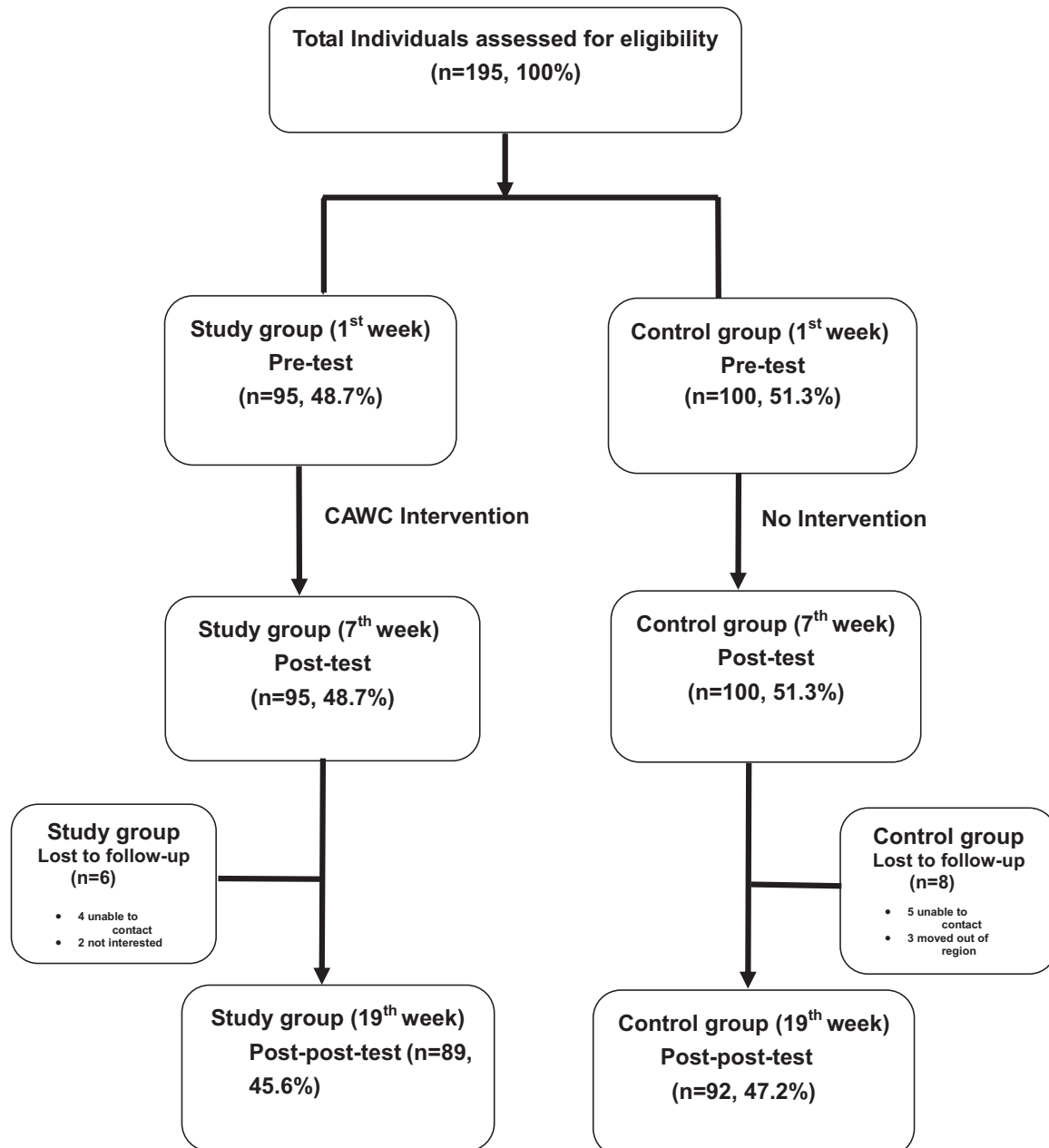
Figure 2. Flowchart of the participants recruitment and allocation.

The LISREL 8.54 software (Scientific Software International) was used to conduct confirmatory factor analysis to test the questionnaires' reliability and validity, and the Statistical Package for the Social Sciences 23.0 (IBM) was used for statistical analyses of the collected data. The chi-squared tests were used to assess the dichotomous demographic variables and examine the differences between the study and control groups at baseline. The generalized estimating equation (GEE)[27] was utilized to test the invitational effect difference between the 2 groups in the post-test and post-post-test.

2.6. Ethical consideration

All participants were ensured that the collected data would be presented anonymously and privacy protected. Each participant

provided written informed consent. All researchers signed the agreements for the protection of the privacy of the participants.

Because this study did not obtain the consent of the participants in the experimental design to disclose the original data. Due to privacy and ethical concerns, neither the data nor the source of the data can be made available. The study protocol was approved by the Research Ethics of Committee, National Taiwan University (IRB No. 202002ES017).

3. Results

3.1. Sample description

Table 1 shows the demographic characteristics of the participants at baseline. No significant differences between the 2 groups were

Table 1

Demographics of participants at baseline.

Variables	Mean(%)		χ²
	Study group (n = 95)	Control group (n = 100)	P
Age			
65-69	55 (57.9%)	67 (67.0%)	.003†
70-74	25 (26.3%)	31 (31.0%)	
≥75	15 (15.8%)	2 (2.0%)	
Gender			
Male	22 (23.2%)	36 (36.0%)	.071
Female	73 (76.8%)	64 (64.0%)	
Education level			
Illiterate or Elementary school	19 (20.0%)	22 (22.0%)	.310
Junior high school	58 (61.1%)	51 (51.1%)	
Senior high school or above	18 (18.9%)	27 (27.0%)	
Marital status			
No spouse*	22 (23.2%)	34 (34.0%)	.130
Having spouse	73 (76.8%)	66 (66.0%)	
Current sibling number			
0	8 (8.4%)	17 (17.0%)	.137
1-2	21 (22.1%)	25 (25.0%)	
≥3	66 (69.5%)	58 (58.0%)	
Financial condition			
Good above	67 (70.5%)	72 (72.0%)	.387
Fare	14 (14.7%)	19 (19.0%)	
Low	14 (14.7%)	9 (9.0%)	
Health status			
Good	48 (50.5%)	47 (47.0%)	.448
Rather well	24 (25.7%)	19 (19.0%)	
Fare	13 (13.7%)	18 (18.0%)	
Poor	10 (10.5%)	16 (16.0%)	

* Including single and widow.
† $P < .01$.

found in sex, education level, marital status, current sibling number, financial condition, and health status, whereas a significant difference was found in age distribution significantly ($P < .01$). There were more subjects over 75 years in the study group (15.8%) than in the control group (2.0%). The percentage of females was higher in the study group (76.8%) than in the control group (64.0%). The percentage of senior high school or above in the study group (18.9%) was less than that of the control group (27.0%). In terms of marital status, more having spouse subjects were in the study group (76.8%) than in the control group (66.0%). The percentage of current sibling number ≥3 was higher in the study group (69.5%) than in the control group (58.0%). In terms of financial condition, there were more subjects of the lower class in the study group (14.7%) compared with the control group (66.0%); the percentage of poor health status in the study group (10.5%) is less than the control group (16.0%).

3.1.1. Reliability and validity analysis. A factor loading higher than 0.5 indicates the individual items of a scale have acceptable reliability.[28] The factor loadings (λ value) of the items in active aging, healthy life, and mental health were between 0.64-0.93, 0.60-0.81, and 0.62-0.90 (Table 2) and thus had acceptable reliability. The Cronbach α values of the questionnaires were between 0.84 and 0.97, indicating good reliability. A questionnaire should have a composite reliability greater than 0.7,[28] and the values were between 0.89-0.97 in this study, meaning that the latent factors had good internal consistency (Table 2). The average variance extracted (AVE) values of the latent factors in this study ranged from 0.57 to 0.74. On the basis that an AVE value greater than 0.5 is required for convergent,[29] we

Table 2

Factor loading value and reliability.

Factor	Measure items	Factor loading	t value	Composite reliability	α value
Active aging	When I am sick, I can follow the doctor's advice and take medications on time	0.68	23.20	0.97	0.97
	I can properly and arrange my daily life	0.85	60.09		
	I understand the elderly related diseases and prevent them	0.81	48.29		
	I can accept and affirm myself	0.93	132.77		
	I can respect life and face death calmly	0.91	144.04		
	I can do housework or help take care of my family	0.64	19.87		
	I will regularly contact and meet with relatives and friends	0.85	64.63		
	I am willing to participate in some lifelong learning activities	0.81	48.29		
	I am willing to participate in different leisure activities to adjust my body and mind	0.93	132.77		
	I get along well with my family	0.89	133.91		
	I can understand the means of fraud and prevent it	0.64	19.87		
	I have the concept of financial management	0.85	64.63		
	I can understand the common sense of applying the law to protect myself.	0.80	43.33		
	I can understand and apply the basic knowledge of home safety	0.93	132.77		
	I can protect myself from abuse, abandonment, negligence	0.89	133.91		
Healthy life	Three meals a day are fixed	0.81	57.86	0.95	0.94
	Get enough sleep every day	0.72	27.63		
	Wear shoes with non-slip soles	0.71	26.16		
	With friends I know	0.81	57.86		
	Participate in supervised sports	0.67	26.86		
	Participate in educational courses on health care	0.60	20.56		
	Participate in religious or cultural activities	0.81	57.86		
	Check cholesterol (blood fat) in the past year	0.72	27.63		
	Have blood glucose measured in the last year	0.71	26.16		
	Eat at least one and a half bowls of vegetables every day	0.81	57.86		
	Eat 2 bowls of fruit every day	0.72	27.63		
	Accumulate 30 min of exercise every day	0.74	36.91		
	At least 3 times a week, 30 min of exercise each time	0.74	36.91		
	Brush your teeth 3 times a day	0.81	57.86		
Mental health	Feeling nervous	0.79	34.20	0.89	0.84
	Feel easily distressed or irritated	0.90	127.49		
	Feeling melancholy and depressed	0.73	18.91		
	Feel inferior to others	0.85	50.09		
	Difficulty in sleeping, such as difficulty falling asleep, waking up easily or waking up early	0.62	16.32		

Factor correlation and square root value of AVE.

	Active aging	Healthy life	Mental health	ASV	MSV	AVE
Active aging	(0.83)			0.37	0.41	0.69
Healthy life	0.64	(0.75)		0.35	0.41	0.56
Mental health	−0.59	−0.55	(0.78)	0.32	0.34	0.62

The diagonal number is the square root value of AVE.
ASV = average share variance, AVE = average variance extracted, MSV = maximum share variance.

concluded that the latent factors had good discriminant and convergent validity. The square roots of the AVE of each factor in this study were between 0.75-0.83 and greater than the correlation coefficients between any 2 factors (Table 3), suggesting good discriminant validity of the questionnaires. Also, the AVEs were greater than the maximum share variance and average share variance, confirming the discriminant validity of the questionnaires (Table 3).

3.1.2. Model fit analysis. In terms of absolute fit index, the conceptual model goodness of fit index of this study was 0.92 (≥0.90), indicating that the hypothetical model was acceptable. In terms of value-added fit indexes, the adjusted goodness of fit index was 0.91; non-normed fit index was 0.94; normed fit index was 0.94; comparative fit index was 0.95; incremental fit index was 0.95; relative fit index was 0.94, all higher than the judgment criterion of 0.90, indicating that the hypothetical model is acceptable. The appropriateness of the conceptual model was thus supported, and the overall construct validity was confirmed. The items that passed the reliability and validity test for active aging, mental health, and healthy life were summed up to be the latent factors.

3.2. Comparison of outcome between groups

Figures 3 to 6 show the assessed outcomes before (pre-test) and after (post-test and post-post-test) intervention. Age was adjusted in analyses because it was significantly different between the 2

groups. GEE analysis demonstrated significant differences in the pre-post-test and pre-post post-test in healthy life, mental health, social participation, and active aging (P values < .001) (Table 4). The study group exhibited significantly improving the cognitive scores of healthy life, mental health, social participation, and active aging compared with the control group.

4. Discussion

4.1. Main finding

This study conducted a multi-disciplinary active aging promotion program for community-dwelling elderly through a group intervention at a community center in Taiwan. The significant raise of awareness and perception was brought by the intervention included reduced risk of unsound nutrition, regular weekly exercises, routine blood pressure and sugar measurements, increased capacity to seek health maintenance information, decreased reliance on passion-focused coping, reduction of severity of sleep disorders, and physical health. Because the participants took part in the community activities, they had presented higher performance of social skills, enhance the concept of financial management, understand and apply home safety knowledge, and avoid abuse and negligence which was learned from intervention program. Overall, the CAWC intervention program for the elderly in the study group was effective in improving healthy life, mental health, social participation, and active aging compared with the control group.
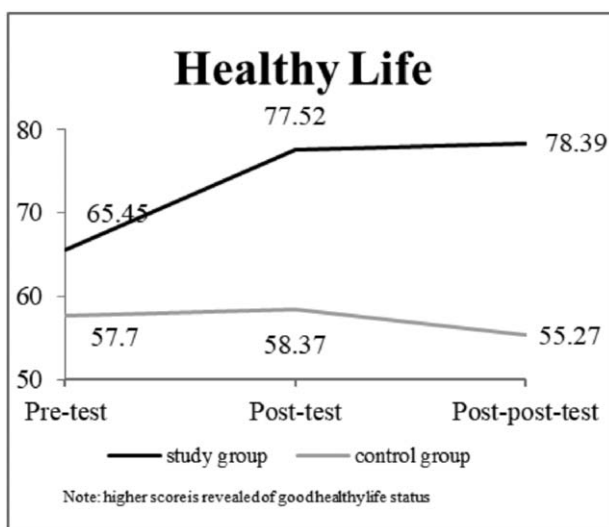

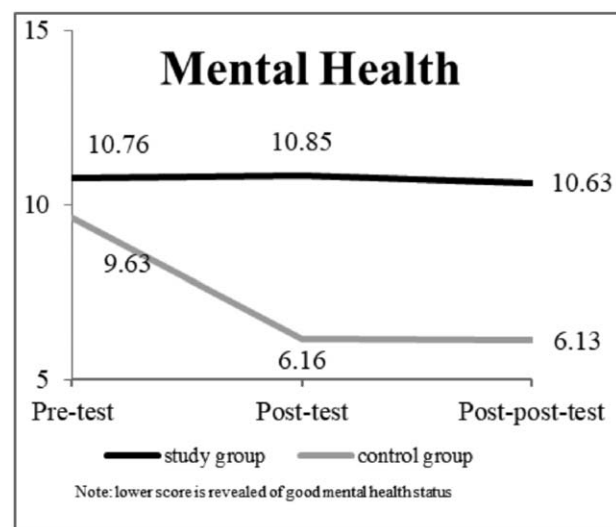**Figure 3.** Healthy life score analysis of the study group and control group.

Figure 4. Mental health score analysis of the study group and control group.

Figure 5. Social participation score analysis of the study group and control group.

4.2. Outcome evaluation

4.2.1. Healthy life.
The action plans for promoting healthy and active aging were first officially described in the WHO's Ageing and Life Course Program in 2002, and health promotion, disease prevention, and equitable access to quality long-term care are attributable to successful active aging.[4] Healthy eating, oral health care, appropriate medication intervention were also introduced in the program to promote the healthy life of the elderly.[4,29] A person-to-person intervention study found that health and nutrition supplementation improved after the intervention also.[30] It suggested that the healthy life would be maintained by a well designed intervention program to the elders.

Bazzno et al conducted a study using the Healthy Life Change Program in a community-based program found significantly better healthy life outcomes (life behaviors and regular exercise maintenance) in the study group compared with control.[31] Besides, participants in the study group had the opportunity to
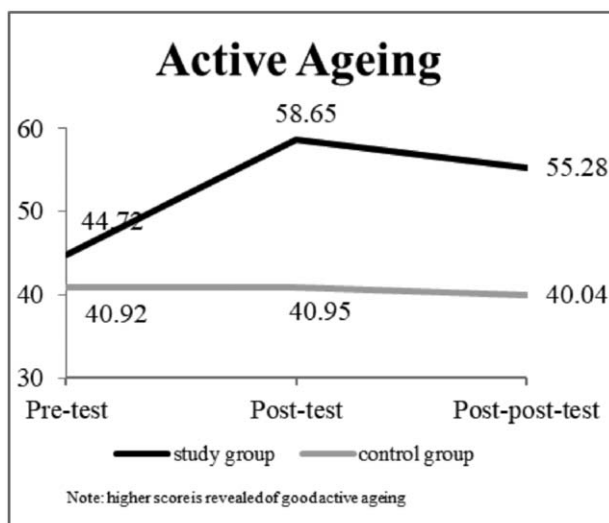

Figure 6. Active aging score analysis of the study group and control group.

enhance their knowledge, correct unhealthy nutrition behaviors, and attend other health courses. In our study, the same healthy life outcomes were improved in the study group, suggesting that lifelong learning and advancing knowledge and skills in health promotion suggest that a community-based program is an effective strategy for successful proceeding.

4.2.2. Mental health.
Mental health services play a crucial role in the management of depression and suicide among the elderly. The WHO indicated that cognitive capacity might naturally decline with age which can be compensated by preventing disuse, illness, medication dependence, poor life motivation, lack of confidence, and loneliness.[4] A recent study demonstrated that community cares significantly improved the mental health of the elderly, including lowering suicidality.[32] The reasons of improvement might be explained by the transference of life's attention to new goals and experiences.[33] The mental health components of our intervention program included psychological health minding, optimistic aging life, and music therapy. The improvement in the study group for mental and psychological status, including safety life, depression and difficulty sleeping relief, and self-confidence emotion were similar to the results reported by a USA study which used the Mental Healthiness and Aging Initiative as the intervention program. The authors described sustained improvement in awareness and knowledge of the aged adults.[34] And coherence with Hsu's person to person intervention study showed of increasing cognitive function through training program and mental well-being with positive emotions by intervention on coping skills in a community based center also.[30]

4.2.3. Social participation.
Social support and social participation are strongly connected to the elderly especially participating in leisure, cultural and spiritual activities in the family and community.[5] The community centers' social networks and support help encourage the elderly to attend social activities.[30] For social participation, our program provided lectures on grateful manners and skills. Our survey revealed that participants in the study group had significantly improved social participation attitude at the post-test and the post-post test stage. Thus, the elderly could be active participants in an age-integrated society and active contributors and beneficiaries of aging process.[4]

4.2.4. Active aging.
The WHO regards active aging as a lifelong process shaped by social participating, respect and social inclusion, community support, and health service.[5] The courses of active aging in our intervention program included personal life stories sharing, new concept of healthy aging, heaven minding in heart with optimistic manner and self-esteem, and generosity in giving. Our survey revealed significant improvement of active aging life in the study group compared with the control group, which continued to the post-post test stage. Rechel indicated that while lifestyle and medical advances contribute to longevity, they bring social, economic, and health challenges as life expectancy increases.[35,36] Our intervention approach offers some practical strategies for confronting the challenges of medical, mental, and social determinants during the aging process.

4.2.5. Strengths and limitations.
This study has some strengths as following. First, the critical contribution of our study is providing a valuable intervention program utilizing a group-based approach to coach community elderly to help improve their healthy life, social participation, and active aging and reduce their

Table 4

Effect analysis of the study group and control group.

Domain	Variable	Estimated parameters (β)	SE	Wald X^2	P
Healthy life	Intercept term	57.81	0.73	6208.80***	.000
	Group	7.69	0.95	64.83***	.000
	Group # Post-test	11.40	0.57	397.39***	.000
	Group # Post-Post-test	15.20	0.71	453.19***	.000
Mental health	Intercept term	10.82	0.33	1102.24***	.000
	Group	−1.11	0.43	6.58**	.010
	Group # Post-test	−3.56	0.26	194.52***	.000
	Group # Post-Post-test	−3.28	0.25	166.27***	.000
Social participation	Intercept term	1.05	0.13	62.32***	.000
	Group	0.25	0.19	1.88	.170
	Group # Post-test	2.01	0.10	409.27***	.000
	Group # Post-Post-test	1.91	0.09	426.76***	.000
Active aging	Intercept term	41.14	0.59	4858.96***	.000
	Group	3.06	1.38	4.94*	.026
	Group # Post-test	13.91	0.44	980.41***	.000
	Group # Post-Post-test	11.48	0.91	157.75***	.000

The analysis was conducted by generalized estimating equation with normal or binomial distribution models.
Lower score is revealed of good mental health status.
*$P < .05$, **$P < .01$, ***$P < .001$.

anxiety. Second, through team discussion among medical, educational, and social workers, we have designed a thoughtful and multi-disciplinary intervention program meeting the community's needs. Third, we have created the elderly education material databases, continued communication, and documented the ideas and thinking for fortifying the intervention effect for further implementation. Nonetheless, several limitations should be considered when interpreting our results. First, although we adopted an RCT design, significant group differences were observed. Nevertheless, this was statistically controlled in the GEE. Second, our study focused on the short-term effects in 3 months. It is unsure how the intervention effects may sustain in a more extended period. Third, we selected only 1 community in this study, and caution should be exercised when interpreting the findings.

5. Conclusion

This study provided a well evidence of higher cognitive score supporting the effectiveness of a multi-disciplinary intervention program in maintaining healthy life, mental health, social participation, and active aging in the elderly. The intervention outcomes met the well active aging lifestyle proposed by WHO for active aging composing of determinants with a healthy life, mental health, and social participation. Such an intervention program could be designed and implemented in other similar communities with the help of medical, social, and educational experts team. Training of seed leaders in the different communities for wider dissemination is recommended.

Author contributions

Conceptualization: Ying-Chen Chi.
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Investigation: Ying-Chen Chi, Chen-Long Wu.
Methodology: Ying-Chen Chi, Chen-Long Wu, Hsiang-Te Liu.
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Validation: Hsiang-Te Liu.
Writing – original draft: Ying-Chen Chi, Chen-Long Wu.
Writing – review & editing: Ying-Chen Chi, Hsiang-Te Liu.

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