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Original Article

Active Engagement in Social Groups as a Predictor for Mental and Physical Health Among Taiwanese Older Adults: A 4-year Longitudinal Study☆

Keng-Lin Lee [1], Chih-Hsun Wu [1], Ching-I Chang [2], Li-Jen Weng [1], Yin-Chang Wu [1], Ching-Yu Chen [2, 3 *]

[1] Department of Psychology, National Taiwan University, Taipei City, [2] Division of Geriatrics and Gerontology, Institute of Population Health Sciences, National Health Research Institutes, Miaoli County, [3] Department of Family Medicine, College of Medicine, National Taiwan University, Taipei City, Taiwan

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SUMMARY

Objectives: The present research evaluated the long-term effects of late-life social participation on health conditions during 1–4 years among older adults in Taiwan.
Methods: Included in this study were adults older than 65 years who were interviewed in the 1999 fourth-wave Taiwan Longitudinal Study on Aging (TLSA), re-interviewed 1 year later in the Social Environment and Biomarkers of Aging Study, and interviewed 4 years later in the fifth-wave TLSA.
Results: Participation in social groups demonstrated a positive effect on decreasing the risk of developing depressive symptoms in older Taiwanese females 4 years later, regardless of the influences of demographic characteristics and previous health conditions.
Conclusion: Social participation emerged to benefit later mental health among active older female adults. Active participation in social groups should therefore be strongly recommended for maintaining health in old age.

1. Introduction

The World Health Organization (WHO) proposes the concept of "active aging" to highlight the goal of "optimizing opportunities for health, participation and security in order to enhance quality of life as people age"[1]. A major difference between "active aging" and the well-known "successful aging"[2] is that the former places "active participation" ahead of health concerns, whereas the latter subordinates active social engagement as a part of "avoiding diseases" and "having high cognitive and physical functional capacity"[2]. According to WHO, "active" refers to "continuing participation in social, economic, cultural, spiritual, and civic affairs, not just the ability to be physically active or to participate in the labor force"[1]. It is therefore highly important to understand the role of active social participation in the aging process for defining precise operational criteria for active aging.

Social participation refers to "making a productive contribution to society in both paid and unpaid activities"[1]. Several recent studies have shed light on the effective role of social participation in enhancing life satisfaction and reducing the risk of mortality in late life[3–6]. For instance, Menec[3] reports that attending church-related and other socially productive activities was capable of significantly lowering the mortality risk among older adults in Canada. Hsu[6] also indicates that participating in certain types of activities (e.g., farming, childcare, or housework) may reduce mortality in older Taiwanese. The role of active social engagement in maintaining or promoting physical and mental well-being in old age indeed deserves in-depth research attention because the phenomenon of longer life expectancy will be an inevitable trend in the future.

The benefit of social participation on physical health of older adults has been well reported in the literature[7–9]. In their examination on the relationship between activities and functioning in an American sample of 244 adults aged ≥ 65 years, Everard et al[7]

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* Correspondence to: Dr. Ching-Yu Chen, Division of Geriatrics and Gerontology, Institute of Population Health Sciences, National Health Research Institutes, Room 436, 4F, Number 17, Xu-Zhou Road, Taipei 100, Taiwan.
E-mail addresses: cycchen@ntu.edu.tw, chency@nhri.org.tw (C.-Y. Chen).

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report that participation in social activities was associated with higher physical health scores. Based on the study of Wu et al[8], social activities of older Taiwanese, especially playing chess or mahjong, help improve the activities of daily living (ADL) functions while the activities are in progress. As reported by James et al[9], six types of social activities—visiting friends or relatives, playing games, attending group meetings, joining church/religious services, taking trips, and participating in community/volunteer work—were associated with a decreased risk of incident disability in ADL, mobility, and instrumental ADL (IADL) among community-dwelling senior citizens during a 5-year period.

However, most studies investigating the relationships between social participation and health in older adults are based on cross-sectional datasets in Western countries. By contrast, relatively few longitudinal investigations have been conducted in Asian societies. As a matter of fact and to the best of our knowledge, there is no study exploring concurrently the short- and long-term longitudinal effects of social participation on the health of the elderly. It is also notable that the term "participation in social activities" (in which "activities" include interactions with neighbors, friends, or relatives such as attending parties and visiting friends) has been extensively used as an index of active social participation[3,4,7,8]. By contrast, a few studies have adopted the term "engagement in social group" as an essential part of active social participation. A study is thus needed to facilitate a more comprehensive understanding of the relationships between social participation and the health status of older adults in Taiwan.

Based on our belief in the core spirit of "active aging", which stipulates that "regardless of the health status, active participation is important to older adults"[1], the study aimed to examine the correlations between social participation and mental and physical health of older adults in Taiwan in the nearer (1 year) and longer (4 years) future with a nationally representative sample. Furthermore, if significant correlations were found, the second objective of the study was to evaluate the impact of baseline health status on the relationships between social participation and subsequent mental and physical health.

2. Methods

2.1. Sample

The sample used in this study was selected from participants interviewed in the 1999 and 2003 waves of the Taiwan Longitudinal Study on Aging (TLSA) and in the 2000 Social Environment and Biomarkers of Aging Study (SEBAS). The TLSA is a six-wave longitudinal survey on Taiwanese older adults and the SEBAS was performed using a sub-sample of the TLSA. Known for their well-established databases, the TLSA and SEBAS have both been consulted by a substantial number of studies concerning aging issues in Taiwan[10–14]. The TLSA was initiated in 1989 with a nationally representative sample of 4049 persons aged ≥60 years who were drawn by a multistage probability method using household registration data. In 1999, the survey was expanded to include an additional sample of 2462 older adults aged 50–67 years, thereby establishing a solid sample of Taiwanese adult aged ≥50 years.

A third follow-up study with 4440 respondents completing the interviews was conducted in 1999. In 2000, 1713 respondents from the 1999 TLSA were randomly selected, and 1497 of these respondents completed interviews for the SEBAS.

In 2003, the fourth-wave TLSA was launched with 3778 respondents. Based on the TLSA and SEBAS databases, our study incorporated interviewees who (1) were older than 65 years old in the first-wave 1999 TLSA, (2) had been recruited for follow up 1 year later in the 2000 SEBAS, and (3) were included 4 years later in the fifth-wave TLSA. Participants with responses provided by proxies were excluded from analysis. The postexclusion final sample comprised 648 older Taiwanese adult who were 65–89 years old in 1999. The present study was approved by the Institutional Review Boards of the Bureau of Health Promotion (Health Promotion Administration, Ministry of Health and Welfare), Taipei City, Taiwan.

2.2. Measures

2.2.1. Demographic information: age, sex, and education

Because previous studies have found major differences in older men and women[14], sex was used as a grouping variable in subsequent analyses.

2.2.2. Social activities

The frequency of participation in social activities was measured in the 1999 TLSA. The participants were asked to indicate how often they took part in playing chess, chatting, or engaging in group activities (0 = never; 1 = < 1 time per week on average; and 2 = > 1 time per week on average). A total score of the three items ranged from 0 to 6 with a higher score indicating a higher level of participation in social activities.

2.2.3. Social groups

The frequency of engagement in social groups was also measured in the 1999 TLSA in which participants were asked to indicate whether they were members of community friendship groups, religious groups, business associations, political groups, volunteer groups, clan associations, senior groups, or learning clubs for older adults (0 = "no"; 1 = "yes"). A total score ranged from 0 to 8 with a higher score indicating a higher level of engagement in social groups.

2.2.4. Subjective health

One single item (i.e., question) was used to assess subjective health in 1999, 2000, and 2003. Participants were asked to indicate whether their health was "good", "fair", or "poor" in general. Scores ranged from 1 to 5 with a lower score representing better subjective health.

2.2.5. Depressive symptoms

Mental health was measured in 1999, 2000, and 2003 using 10 items from the Center for Epidemiologic Studies–Depression Scale (CES-D)[15,16]. This short form of the CES-D generated a score ranging from 0 to 30 with a higher score indicating more depressive symptoms. The 10-item short form demonstrated good internal consistency reliability for the analyzed sample in 1999, 2000, and 2003 ($\alpha = 0.84$, $\alpha = 0.81$, and $\alpha = 0.84$, respectively).

2.2.6. Physical functional limitations

Physical health was measured in 1999, 2000, and 2003 by difficulty in squatting, climbing 2–3 flights of stairs, lifting 11–12 kg, walking 200–300 m, standing continuously for 15 minutes, running a short distance (20–30 m), standing continuously for 2 hours, raising both arms overhead, and grasping or turning objects with fingers.

A total score ranged from 0 to 27 with a higher score indicating more severe physical functional limitations. The internal consistency reliability α values for the index in 1999, 2000, and 2003 of the analyzed sample were 0.87, 0.87, and 0.89, respectively.

2.3. Data analyses

This study adopted the procedures of hierarchical regression analyses to examine the possible long-term effects of social

participation in 1999 on three health domains—subjective health, depressive symptoms, and physical functional limitations—in 2000 and 2003 for older men and women[17,18]. For each domain of the health status in 2000 and 2003, age and education were first included in the regression model. In 1999, subjective health, depressive symptoms, and physical functional limitations were added to control the initial health status for older adults. The level of social activity participation and social group engagement were used to evaluate the long-term effects of social participation on the health of older Taiwanese adults.

3. Results

3.1. Participant characteristics

The participants interviewed in 1999 were 65–89 years old with a mean age (and standard deviation) of 72.39 (4.48) years and 72.48 (4.80) years for men and women, respectively. Most male respondents reported an elementary school education, whereas approximately one-half (55%) of the female respondents were illiterate. Table 1 presents the mean values, standard deviations, and ranges for all measures used in the study. The absence of significant differences in the mean scores of all measures between the analyzed sample in 1999 and the dropouts testifies to the low sample selectivity of this study.

3.2. Correlation between social participation and health status

Table 2 presents the Pearson's correlations for all measures used in the study. The correlations between social activity participation and social group engagement of the male and female groups were 0.31 and 0.29, respectively, which indicates that participants attending more social groups were had a higher frequency of social activity participation. The correlations between social participation and the three health domains in 1999, 2000, and 2003 were all significant in both men and women.

For males, participating more in social activities (e.g., chatting or group activities) was associated with fewer depressive symptoms and better physical health ($r = -0.13$, $p < 0.05$) in 1999, and males engaging more in social groups (e.g., community, friendship groups, or volunteer groups) reported fewer depressive symptoms ($r = -0.12$, $p < 0.05$) in 1999. However, the correlation between social participation in 1999 and health status were insignificant in the follow ups (i.e., 2000 and 2003). Females participating more in social activities reported fewer depressive symptoms ($r = -0.16$, $p < 0.05$) in 1999 and subsequent depressive symptoms ($r = -0.13$, $p < 0.05$) in 2000, and females with more active social group engagement demonstrated fewer depressive symptoms ($r = -0.21$, $p < 0.01$) and fewer physical functional limitations ($r = -0.18$, $p < 0.01$) in 1999, and better subsequent health status in years 2000 and 2003 ($r = -0.14$–-0.20, $p < 0.05$), except for depressive symptoms in 2000.

3.3. Social participation level and health conditions

Table 3 lists the regression coefficients from hierarchical regression analyses. For the male group, hierarchical regression analyses revealed that the R^2 of demographic variables and prior health conditions on later subjective health, depressive symptoms, and physical health 1 year later were 0.25 ($p < 0.001$), 0.13 ($p < 0.001$), and 0.44 ($p < 0.001$), respectively. However, the ΔR^2 of social participation on health status 1 year later was insignificant beyond the influences of demographic characteristics and previous subjective health, depressive symptoms, and physical functional limitations. The results of hierarchical regression analyses during 4 years indicated that the R^2 of demographic variables and prior health conditions on later subjective health, depressive symptoms, and physical functional limitations were 0.17 ($p < 0.001$), 0.18 ($p < 0.001$), and 0.34 ($p < 0.001$), respectively. As expected, previous health conditions emerged as the best predictors for health 4 years later. The ΔR^2 of social participation on physical health was significant ($p < 0.01$) beyond and above the influences of demographic characteristics and previous health status. The regression coefficient of participation in social activities on physical functional limitations was significant, although the two variables were uncorrelated in Pearson's correlation ($r = -0.01$, $p > 0.05$). Social activity participation in 1999 thus appeared to be a likely suppressor against physical functional limitations in 2003[17].

For the female group, the hierarchical regression analyses for health were similar to those of the male group in 2000 but not in 2003. The ΔR^2 of social participation on depressive symptoms was insignificant ($p > 0.05$), although older women who had more frequent social group engagements had fewer depressive symptoms 4 years later, after controlling for influences of all demographic characteristics and prior health status. Engagement in social groups thus appeared to have the benefit of mitigating depression in older women in Taiwan.

4. Discussion

The purpose of the study was to investigate the possible long-term effects of social participation on mental and physical health with a nationally representative sample of adults aged ≥65 years in Taiwan. The present findings show that engagement in social

Table 1
Descriptive statistics of the measures analyzed.

Variables		Male				Female				*t*
		N	Range	Mean	SD	*N*	Range	Mean	SD	
Demographic information	Age in 1999	384	65–89	72.39	4.48	264	65–89	72.48	4.80	−0.26
	Education	384	0–17	6.49	4.70	264	0–16	3.00	3.81	10.04**
Social participation in 1999	Social activity	375	0–6	1.70	1.44	261	0–6	1.61	1.34	0.83
	Social groups	381	0–5	0.91	1.00	263	0–5	0.60	0.91	3.93**
Health in 1999	Subjective health	384	1–5	2.60	1.05	264	1–5	3.01	1.07	−4.87**
	Depressive symptoms	383	0–25	4.52	4.93	263	0–30	7.03	6.38	−4.21**
	Physical functional limitations	381	0–27	2.39	4.19	259	0–24	5.24	5.60	−2.57*
Health in 2000	Subjective health	384	1–5	2.78	1.03	264	1–5	3.12	1.00	−5.63**
	Depressive symptoms	382	0–27	5.07	5.33	262	0–30	6.88	6.48	−3.86**
	Physical functional limitations	381	0–24	3.11	4.73	258	0–25	6.56	5.81	−4.15**
Health in 2003	Subjective health	384	1–5	2.96	1.08	264	1–5	3.17	1.00	−7.36**
	Depressive symptoms	383	0–27	5.13	5.31	263	0–29	7.11	6.84	−8.25**
	Physical functional limitations	383	0–27	4.68	5.72	262	0–27	8.93	7.07	−8.42**

*$p < 0.05$; **$p < 0.001$.

Table 2
Pearson correlation coefficients of the measures analyzed.[a]

Variables		1	2	3	4	5	6	7	8	9	10	11	12	13
Demographic information	1. Age in 1999	—	−0.04	0.04	−0.08	−0.08	0.03	0.25***	−0.03	−0.09	0.24***	−0.05	0.04	0.30***
	2. Education	−0.04	—	0.21**	0.06*	−0.15*	−0.14*	−0.16*	−0.26***	−0.20**	−0.21***	−0.16*	−0.17**	−0.16*
Social participation in 1999	3. Social activity	−0.01	0.05	—	0.29***	−0.09	−0.16*	−0.09	−0.06	−0.13*	−0.08	−0.12	−0.07	−0.02
	4. Social groups	0.02	−0.03	0.31***	—	−0.08	−0.21**	−0.18**	−0.14*	−0.11	−0.18**	−0.16*	−0.20**	−0.16*
Health in 1999	5. Subjective health	−0.03	−0.19***	−0.07	0.06	—	0.36***	0.47***	0.46***	0.30***	0.33***	0.38***	0.32***	0.30***
	6. Depressive symptoms	0.06	−0.17**	−0.13*	−0.12*	0.28***	—	0.46***	0.34***	0.39***	0.34***	0.32***	0.47***	0.26***
	7. Physical functional limitations	0.1 5**	−0.15**	−0.13*	0.00	0.038***	0.24***	—	0.37***	0.26***	0.58***	0.28***	0.34***	0.54***
Health in 2000	8. Subjective health	−0.04	−0.16**	−0.05	0.04	0.44***	0.27***	0.31***	—	0.45***	0.53***	0.38***	0.39***	0.38***
	9. Depressive symptoms	0.00	−0.16**	−0.10	−0.07	0.27***	0.29***	0.20***	0.35***	—	0.48***	0.26***	0.43***	0.35***
	10. Physical functional limitations	0.17**	−0.23***	−0.08	−0.01	0.33***	0.31***	0.63***	0.41***	0.37***	—	0.38***	0.38***	0.63***
Health in 2003	11. Subjective health	−0.02	−0.06	0.04	0.02	0.39***	0.17**	0.20***	0.38***	0.26***	0.25***	—	0.49***	0.52***
	12. Depressive symptoms	0.02	−0.12*	−0.02	−0.05	0.27***	0.37***	0.12*	0.27***	0.42***	0.23***	0.32***	—	0.43***
	13. Physical functional limitations	0.16**	−0.12*	0.01	.01	0.27***	0.17**	0.59***	0.34***	0.27***	0.59***	0.44***	0.38***	—

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
[a] The values on the upper diagonal and lower diagonal are Pearson correlation coefficients among the female group (Ne = 244) and among the male group (N = 361), respectively.

Table 3
The unstandardized regression coefficients of social participation on subjective health, depressive symptoms, and physical functional limitations.[a]

Predictors		Health in 2000						Health in 2003					
		Male			Female			Male			Female		
		Subjective	Depression	Physical	Subjective	Depression	Physical	Subjective	Depression	Physical	Subjective	Depression	Physical
Demographic information	Age in 1999	−0.01	−0.02	0.09*	−0.01	−0.16	0.14*	−0.01	0.00	0.090	−0.01	0.0700	0.26**
	Education	−0.02	−0.12*	−0.12**	−0.04**	−0.15	−0.14	−0.00	−0.04	−0.05	−0.01	−0.14	−0.15
Health in 1999	Subjective	0.34***	0.63*	0.380	0.28***	0.60	0.320	0.37***	0.95***	0.27	0.28***	0.85*	0.57
	Depression	0.03*	0.22***	0.11*	0.03**	0.28***	0.09	0.02	0.37***	0.05	0.02*	0.35***	0.03
	Physical	0.04**	0.08	0.61***	0.020	0.15	0.46***	0.02	−0.03	0.75***	0.01	0.10	0.49***
Social participation in 1999	Activity	0.02	−0.15	0.12	0.03	−0.13	0.18	0.07	0.25	0.60***	−0.03	0.29	0.48
	Group	0.03	−0.18	−0.05	−0.06	−0.29	−0.46	−0.02	−0.11	−0.17	−0.10	−0.88*	−0.66
Step 1	ΔR^2	0.04***	0.04**	0.09***	0.06***	0.04**	0.10***	0.01	0.02*	0.04***	0.010	0.04**	0.12***
Step 2	ΔR^2	0.21***	0.09***	0.35***	0.23***	0.15***	0.25***	0.16***	0.16***	0.30***	0.18***	0.21***	0.20***
Step 3	ΔR^2	0.00	0.00	0.00	0.00	0.00	0.01	0.010	0.00	0.02**	0.01	0.01	0.01
	N	368	366	365	254	252	248	368	367	367	254	253	252

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
[a] In Step 1, the age and education are included in the regression model. In Step 2, the initial health status such as subjective health, depressive symptoms, and physical functional limitations in 1999 are added and the age and education are controlled. In Step 3, the level of social activity participation and social group engagement are included, whereas age, education and initial health status are adjusted.

groups among older Taiwanese women was associated with fewer depressive symptoms 4 years later. More active or frequent participation in social groups remained related to the reduction in depressive symptoms 4 years later, even after controlling for prior subjective health, depressive symptoms, and physical functional limitations. No similar correlation, however, was observed in older Taiwanese men.

The sex differences were also present in all health domains at all waves: men reported better subjective health and fewer depressive symptoms and physical functional limitations than women. As in several previous studies, we were unable to conclude if older Taiwanese women were indeed poorer in health or if they just tended to report a greater degree of disability[14,19]. By contrast, a closer look into the different aspects of health finds that older Taiwanese adults seemed to be more positive (i.e., "optimistic") in responding to items concerning physical functional limitations and depressive symptoms than in rating their subjective health. For instance, the average CES-D scores of older Taiwanese men and women were 4.52 and 7.03, respectively, in 1999; these scores were relatively low in comparison with those of their counterparts in other countries[20]. However, their average scores of self-rated health (2.60 for men and 3.01 for women) were among the poorest worldwide[21,22]. In other words, older Taiwanese people appeared to be more certain or positive when responding to specified items such as "Do you have any difficulties for walking 200−300 m?" and "Did you feel sad in the past week?" They seemed, however, more negative or less certain in rating the general impression of their health. Similar results were found in previous studies that show that Taiwanese people, while responding more positively to quality of life in specific domains, tended to have a relatively more negative perception in general, less specific issues such as self-rated health[23]. Reporting a poorer self-rated health may thus be explained partially by the tendency of older Taiwanese people to be more certain (thus more "optimistic") in answering questions that are more concrete and specified but less certain (therefore more "pessimistic") when the question concerns a broad concept or something general.

Our findings further suggest the possibility that engaging in social groups, at least for older Taiwanese women, may positively influence subjective health. On the one hand, the survey results showed that older Taiwanese adult neither frequently participated in social activities nor actively engaged in social groups. On average, older women engaged in less than one social group. On the other hand, the Pearson's correlation results indicated that, in spite of this overall low level of social group engagement, women engaging in social groups reported better self-rated health in the years 2000 and 2003, but not in the year 1999. This seems to imply that engaging in social groups could be beneficial for subjective health after 4 years, although significant correlations were not found after controlling for other variables. One possible explanation lies in the moderating effect of the variable "prior health status". That is to say, engaging in social groups remained significantly correlated with subsequent subjective health in the absence of "prior health status" as a moderator variable. The correlation, however, disappeared after the moderator variable was taken into consideration. Further studies are needed to explore and clarify these relationships.

As several studies on mental health suggest, depression in older adults grows with age[24–26]. However, our study observed no significant change in the mean scores of depressive mood over the 4-year span among older women. Furthermore, the current findings revealed a positive effect of previous social group participation on depressive symptoms among active older women in Taiwan beyond and above prior subjective health, depressive symptoms, and physical functional limitations. Higher levels of social interaction appeared to help suppress depression in old age and maintain the physical functions of senior adults. The reason for the absence of this "suppression effect" in men may lie in the finding that older women tend to be more open and willing to express their feelings than older men in Taiwan[27]. As a result, active social participation opens additional social networks (other than family) and provides more opportunities for older women to share and discuss their feelings with peers and other members in those social networks, thereby helping decrease the risk of developing depression.

Consistent with past findings[7–9], the present study found that more active or frequent engagement in social groups is associated with fewer physical functional limitations in older women. However, the association between early participation in social groups and later physical functional limitations disappeared when subjective health, depressive symptoms, and physical functional limitations were controlled for. This seems to suggest that previous health conditions remain the primary determinants of subsequent health conditions. In light of its benefit on mental health by mitigating depression, social participation may be expected to extend its positive effect to the other two domains of subjective health and physical health. We accordingly assume that once mental health is enhanced by participation in social groups, there may be a chance that subjective health and physical health will improve as the indirect benefits of better mental health; however, social participation had no direct bearing on subjective health and physical health in our study. Health promotion specialist should therefore consider incorporating social components and providing opportunities of group engagement in activities so as to produce potential positive effects on health in later life. Social participation involving meaningful activities such as volunteer programs can be designed to better motivate engagement[28]. For example, post offices and subway stations in Taiwan encourage older adults to take part in their volunteer programs. This engagement appears to offer an opportunity for health improvement through social involvement.

The present study found that engagement in social groups beneficial for the health of older Taiwanese; however, the present study also learned that our senior citizens partook in less than one social group on average. This finding may be partly because, a decade ago, older Taiwanese had a lack of suitable channels. As used in this study, the term "participation in social activities" more concerns self-oriented activities; by contrast, "engagement in social groups" suggests more structured, formal interactions with groups of people. It is thus our belief that policymakers in Taiwan will be more effective in promoting "active aging" if they can pay closer and greater attention to issues related to "active/frequent engagement in social groups"[29]. The elderly in Taiwan accounted for 7.1% of the country's total population as early as 1993; the percentage is estimated to reach 14% in 2017 and 20% in 2025[29]. To address the pressing issue of population aging and its impacts on national health care, the government has rendered the development and implementation of policies focusing on "age-friendliness" that are suitable for people of all ages regardless of their age, and supporting "healthy aging in place" that older adults could age healthily not only in their own home setting and communities but also in all health-related organizations, rather than of individual healthcare professionals or single departments alone[30]. For example, 35 community universities via the courses and programs they offer, which they have established one after another during the past 10 years, have been providing older Taiwanese with great opportunities to engage in a wide spectrum of activities and groups. Resources such as these should be better utilized and integrated so there will be enough age-friendly and health-beneficial social networks accessible to older adults in Taiwan.

Two limitations of the present study should be acknowledged at this point. The first limitation concerns the index of social activity participation. The older adults were simply asked how often they

participated in each of the listed activities. There was no assessment on the amount of time spent on each activity. Important inputs such as if and how the duration of participation in each activity may generate different effects on different health domains are therefore unobtainable. Second, the low R^2 index suggests that much of the variation in subjective, mental, and physical health remains unexplained. This is not unique to this study, although it merits attention in future investigations.

In conclusion, the findings of our study reveal a positive effect of social group participation on later mental health among active older adults in Taiwan beyond and above prior health conditions, thereby supporting the concept of active aging that accentuates "active participation" in older age. Vigorous participation in social groups should therefore be strongly recommended for promoting the health of older adults.

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