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ORIGINAL ARTICLE

Psychosocial interventions with art, music, Tai Chi and mindfulness for subsyndromal depression and anxiety in older adults: A naturalistic study in Singapore

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Abstract

Objectives: Subsyndromal depression (SSD) and subsyndromal anxiety (SSA) are common in the elderly and if left untreated, contributes to a lower quality of life, increased suicide risk, disability and inappropriate use of medical services. Innovative approaches are necessary to address this public health concern. We evaluate a community-based psychosocial intervention program and its effect on mental health outcomes in Singaporean older adults.

Method: Elderly participants with SSD and SSA, as assessed on the Geriatric Depression Scale and Geriatric Anxiety Inventory, were included. Intervention groups include Tai Chi exercise, Art Therapy, Mindfulness Awareness Practice and Music Reminiscence Therapy. The program was divided into a single intervention phase and a combination intervention phase. Outcomes were measured with the Zung Self-Rating Depression Scale (SDS) and Zung Self-Rating Anxiety Scale (SAS) at baseline, 4 weeks, 10 weeks, 24 weeks and 52 weeks. The program had ethics board approval.

Results: A hundred and one subjects (25 males, 76 females; mean age = 71 years, SD = 5.95) participated. There were significant reductions in SDS and SAS scores in the single intervention phase ($P < 0.05$), and these reductions remained significant at week 52, after completion of the combination intervention phase, relative to baseline ($P < 0.001$).

Conclusion: Participating in these psychosocial interventions led to a positive improvement in SSD and SSA symptoms in these elderly subjects over a year. This simple, inexpensive and culturally acceptable approach should be adequately studied and replicated in other communities.

Introduction

Singapore has a rapidly aging population. In 2013, 10.5% of the population was above 65 years of age, and this is projected to increase to 19% by Singapore Department of Statistics (2014). Aging and age-related diseases will be a challenge for individuals, families, socio-political and health care systems. Impactful paradigm shifts in mental health care delivery for older persons is necessary. Preventive psychiatry is one such change that has been gaining momentum.

Many elderly have depressive and anxiety symptoms that do not fulfill diagnostic criteria for major depressive disorder or any anxiety disorder. Reported rates of subsyndromal depression (SSD) vary from 8.4% to 9.9% in community samples, or from 5% to 16% in primary care patients, depending on the definition used (Judd *et al.*, 1994; Rucci *et al.*, 2003). Several studies from East Asia found the prevalence of SSD in the elderly population to be about 8% to 9% (Kua and Ho, 2008; Soh *et al.*, 2008). Anxiety disorders are prevalent in older adults but it often goes

unrecognized and untreated. A recent review found that subsyndromal anxiety (SSA) is even more widespread than anxiety disorders, with prevalence rates ranging from 15% to 52.3% in community samples (Bryant *et al*., 2008). One study on the prevalence of anxiety in community-dwelling older adults with cardiovascular diseases found 12-month prevalence rates of anxiety and subthreshold anxiety were 5.1% and 14.8%, respectively (Grenier *et al*., 2012). Both SSD and SSA affect quality of life (Preisig *et al*., 2001; Wetherell *et al*., 2004), increase suicide risks (Sadek and Bona, 2000), increase disability and inappropriate use of medical services (de Beurs *et al*., 1999; Wagner *et al*., 2000).

SSD and SSA are significant public health concerns, and there is a need to develop innovative programs to target this population of older adults to prevent the onset of full-blown disease. Locally, we face certain challenges in developing mental health program due to negative perceptions toward mental illness (Chong *et al*., 2007). Adults with mental disorders often delay seeking help (Chong *et al*., 2012) and reports indicate low rates of mental health service utilization by the population (Ng *et al*., 2003). Almost half of those with mental disorders who did seek help had approached spiritual advisors or other healers (Chong *et al*., 2012). In many parts of the world including Singapore, patients often reject standard psychiatric treatments as they are unfamiliar to them. Negotiating cultural nuances and preferences will be essential as we attempt to develop acceptable and effective treatment strategies.

To address this need, a community-based mental health program was established (Wu *et al*., 2014); we evaluate the four psychosocial interventions delivered, namely Tai Chi Exercise (TCE), Mindfulness Awareness Practice (MAP), Music-Reminiscence Therapy (MRT) and Art Therapy (AT). Evidence suggests that all four of these modalities have promise in improving mental health outcomes.

Tai Chi Exercise

Tai Chi, a form of Chinese Martial Arts in existence for hundreds of years (Wang *et al*., 2009), is increasingly being used in mental health settings. Meta-analytic reviews indicate favorable outcomes on a range of psychological well-being measures including depression and anxiety (Wang *et al*., 2009, 2010, 2014), with large effect sizes for both conditions (Wang *et al*., 2010). In one randomized controlled trial (RCT) conducted in an Asian elderly population, Tai Chi had a positive effect on reducing depressive symptoms compared with no treatment in older patients with depression (Chou *et al*., 2004). Tai Chi has also been evaluated as a complementary modality to pharmacotherapy for geriatric depression, with combination treatment showing greater reduction in depressive symptoms than pharmacotherapy alone (Lavretsky *et al*., 2011).

Mindfulness Awareness Practice

Mindfulness, defined as the process of attending to present-moment experience in a nonjudgmental manner, derives its origins from Eastern Buddhist practices. It is widely adapted and integrated into treatment for many psychological disorders. A recent large meta-analysis presented robust evidence in support of Mindfulness as a treatment for depression and anxiety (Khoury *et al*., 2013). One RCT conducted in Hong Kong found that mindfulness meditation significantly decreased depression and anxiety measures in an adult Chinese population (Lo *et al*., 2013).

Music Reminiscence Therapy

Reminiscence therapy is a popular non-pharmacological intervention for dementia. Evidence suggests it is also valuable in alleviating mood symptoms in elderly without dementia. Reminiscence Therapy entails discussion of past activities, events and experiences with a therapist or in groups. Prompts used to facilitate therapy vary from photographs, household appliances to music and other memorabilia. One meta-analysis assessing the effectiveness of reminiscence and life review on late life depression across different target groups and treatment modalities found a large overall effect size of 0.84, comparable to effect sizes for other pharmacological or psychological interventions (Bohlmeijer *et al*., 2003). A Taiwanese study examining the effects of Reminiscence therapy on institutionalized elderly found significant improvements in psychological well-being and reduction of depressive symptoms and loneliness (Chiang *et al*., 2010).

Art Therapy

Art therapy has a long history in psychiatric treatment but is comparatively less well studied in depression and anxiety in late life. Art therapy typically includes two segments, the creation of an art piece and the subsequent narrative of inner experiences and thoughts. A recent RCT examining the effects of art therapy on healthy aging in older adults found that it

reduces negative emotions and anxiety and improves self-esteem (Kim, 2013). Another study based on participants enrolled in the Australian Longitudinal Study on Women's Health explored the nature of older women's participation in art and craft activities and reported that these women found purpose in their lives, contributing to their subjective well-being while helping and being appreciated by others (Liddle *et al*., 2013).

In this naturalistic observational study, we examine the impact of these four psychosocial interventions on the mental health of community dwelling elderly participants.

Methods

Participants

Community nurses visited homes in 30 public housing blocks in a community in the Western region of Singapore to invite residents, aged 60 years and older, for a detailed screening assessment. Other participants volunteered after hearing about the program from other sources. Screening assessments including the Geriatric Depression Scale (GDS) (Nyunt *et al*., 2009), Geriatric Anxiety Inventory (GAI) (Pachana *et al*., 2007) and Mini Mental State Examination (MMSE) (Feng *et al*., 2012) were conducted by trained nurses. Participants who fulfilled the inclusion criteria based on the screening results were recruited into this study. The study had approval by the University's institutional review board (IRB Reference Code: 13–168).

Inclusion Criteria

- GDS score between 1 and 5
- GAI score between 3 and 10
- MMSE score of 24 and above
- Able to provide written informed consent

Procedures

Participants would attend weekly activities for 10 weeks, fortnightly for 18 weeks and monthly for the rest of the year. Assessment of anxiety and depression levels was conducted at the first week, fourth week, 10th week, 24th week and one year. Demographic data were obtained at baseline.

During initiation into the program, participants were given a choice of which intervention they would like to partake in, namely TCE, MAP, MRT and AT. They adhered to these individual therapies for 10 weeks. Thereafter, facilitators were informed by participants that they would prefer to have all four interventions in one session. It was noted that attendance at the time had dipped by 10% and in line with the initial objectives of service delivery, this was permitted.

In the first six months, each meeting commenced with a 20-minute health education talk, which comprised advice ranging from stabilizing chronic conditions (diabetes, hypertension), the benefits of exercise, diet, health supplements and medication. For the first 10 weeks (single intervention phase), participants would then be divided into their respective intervention groups and participated in the designated activity for 30 minutes. For the rest of the year, or the combination intervention phase, participants would participate in a combination of all four modalities, 30 minutes each for TCE, MAP, MRT and AT; a total of 2 hours of intervention.

Intervention

These groups were conducted by qualified instructors, including certified art psychotherapists and Tai Chi master trainers with over 10 years of experience. All intervention groups were conducted at a research center based in the community.

In the MRT group, an instructor would facilitate discussion of past events or experiences after a sing along of popular evergreen songs. While music was the focus of reminiscence, other prompts were used including photographs and pictures. All participants were given ample opportunity for interaction and reflection.

In the MAP group, instructors would provide guidance for the elderly in mindfulness meditation focusing on body sensations, feelings and thoughts. They would be instructed on various MAP techniques including mindfulness of the senses, body scan practice, walking meditation, "movement nature meant" practice and visuo-motor limbs tasks. There would be a review of how the participants felt and time was given for feedback.

The TCE group was led by an experienced practitioner who would demonstrate a set of slow, non-strenuous movements coordinated with deep breathing. Participants were taught traditional Sun and Yang styles of Tai Chi. Instructors would take participants through warm up exercises for 5 minutes, Tai Chi movements and form for 20 minutes and cool down exercises for 5 minutes.

In the single intervention phase, the elderly AT groups were guided through both the creative and

narrative segments by a trained art therapist. However, when the groups were combined, participants' preference for the narrative segments led to a transition to solely narrative aspects of therapy. Participants were shown an art piece to appreciate and they would reflect on their inner thoughts and experiences.

Assessment Instruments

Geriatric Depression Scale

The original 15-item version of the Geriatric Depression Scale (GDS) (Yesavage *et al*., 1982) was used to index the level of depression. This version of the GDS has been validated and has demonstrated good psychometric properties in the local context (Nyunt *et al*., 2009).

Geriatric Anxiety Inventory

The GAI (Pachana *et al*., 2007), comprising 20 agree/disagree items was used to assess for anxiety symptoms. The GAI has recently shown good psychometric properties in a similar population (Yan *et al*., 2014).

Mini Mental State Examination

MMSE is a 30-point clinician-rated instrument incorporating paper and pencil tasks that is commonly used for cognitive screening (Folstein *et al*., 1975). It takes approximately 10 minutes to complete and assesses memory, orientation, attention, nominal aphasia, receptive aphasia, receptive apraxia, alexia, agraphia and constructional apraxia. A local modified version has been validated and normative data for our population is available (Feng *et al*., 2012).

Zung Self-Rating Depression Scale and Zung Self- Rating Anxiety Scale

The Zung Self-Rating Depression Scale (SDS) (Zung, 1965) and Zung Self-Rating Anxiety Scale (SAS) (Zung, 1971) were used to quantify levels of depression and anxiety, respectively. The scales were selected for their ease of use and brevity. Both the SDS and SAS are 20-item self-report questionnaires that take about 10 minutes to complete. Each item is scored on a Likert scale ranging from one to four. A total score is derived by summing the individual item scores and ranges from 20 to 80. Higher scores indicate more severe depression or anxiety. The SDS has been validated and has demonstrated good psychometric properties in a local community sample (Chang and Koh, 2012).

English and Chinese versions of all the aforementioned questionnaires were provided to participants. Nursing staff were available to provide assistance if participants had any doubts about the items in the questionnaires.

Statistical analyses

Between group differences in the outcome variables at baseline were analyzed using one way analysis of variance. Subsequently, such significant group differences were further analyzed using post hoc Bonferroni tests. A linear mixed model was used to analyze the changes across various time points among the groups, given that the time points were not evenly spread out. In particular, a random intercept model was used, and analyzed with a scaled identity covariance matrix. Time and group were designated as fixed factors in the model and, age, gender, education level, employment status, living arrangement, housing type, medical conditions and baseline data for both SAS and SDS were included as covariates. All categorical data were analyzed using Fisher's Exact Tests (FET). Statistical significance for all analyses was set at $P < 0.05$, with the exception of the post hoc Bonferroni tests where statistical significance was set at $P < 0.0083$ (six comparisons). In cases of incomplete questionnaires, their data were prorated with the mean of the remaining items, unless there were more than 10% missing data, in which case the entire questionnaire was designated as missing data. All calculations were conducted using the Statistical Package for the Social Sciences (SPSS version 20, IBM Corp., Armonk, NY, USA) software.

Results

Demographics and baseline data

A total of 101 subjects (25 males, 76 females; mean age = 71 years, SD = 5.95) were enrolled in the study. Figure 1 presents the participant flow. Six participants were excluded from the analysis due to missing data at baseline. The baseline demographic characteristics and data of all intervention groups are shown in Table 1. Out of the 95 participants included in the analysis, four participants (4%) had a history of depression and three (3%) had a history of anxiety. None of the participants had a history of other mental health conditions. All groups did not differ significantly in their

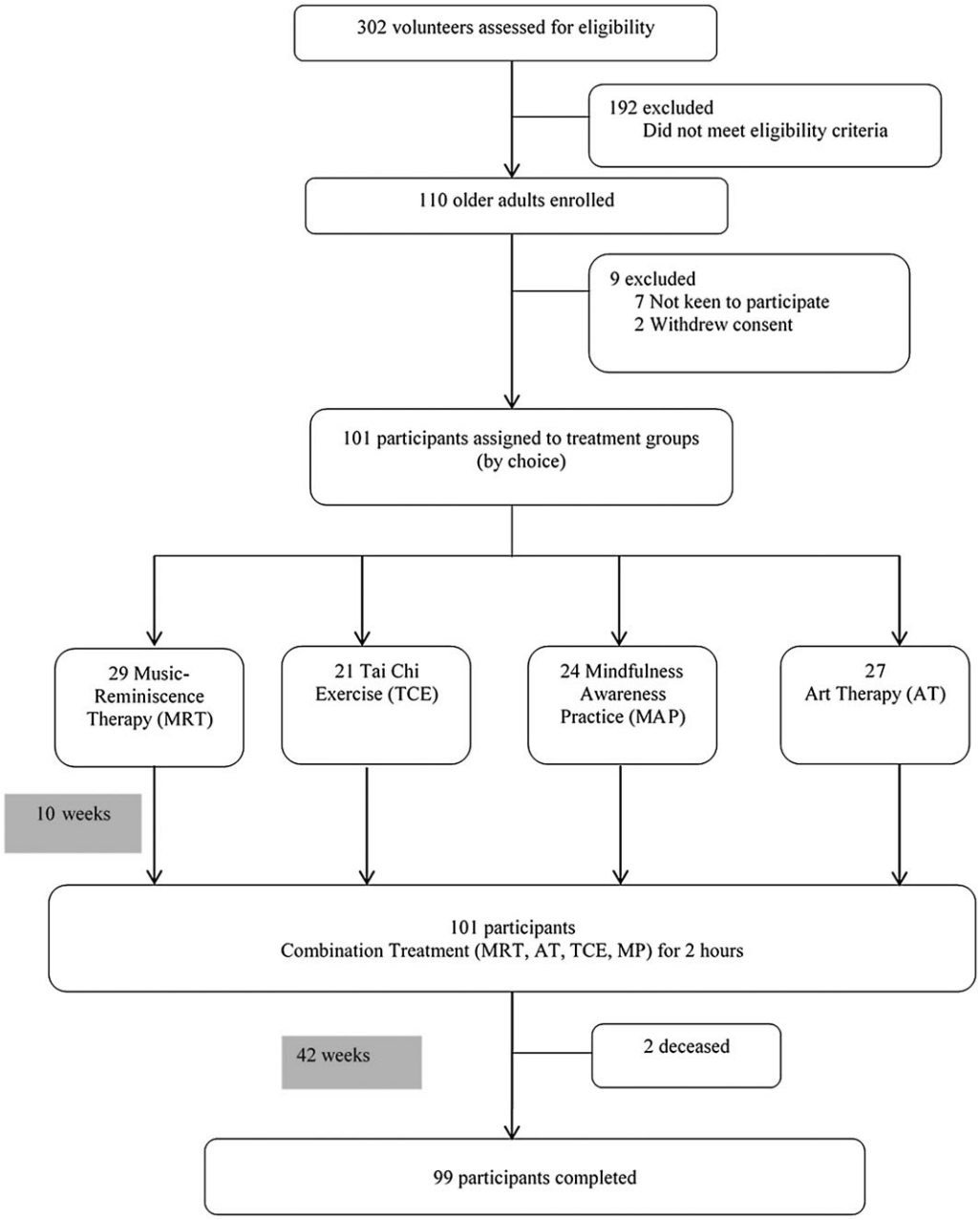

Figure 1. Participant flow.

mean age and distribution of gender, education level, employment status, living arrangement, housing type, medical conditions and mean baseline SDS scores, all $P > 0.05$. However the groups differed significantly in the distribution of marital status; FET = 18.8, $P < 0.05$. Specifically, the proportion of divorced/separated participants in MAP is significantly smaller than the proportion of single participants in MAP, and the proportion of divorced/separated participants in AT is significantly larger than the proportion of single or married participants in AT. There was a significant difference between groups in the baseline SAS scores; $F(3, 91) = 4.20$, $P < 0.05$, specifically, post hoc Bonferroni tests revealed that the MAP group had significantly higher baseline SAS scores than the MRT group, $P < 0.0083$. Both the SDS and SAS had moderate to high levels of internal consistency; Cronbach's $\alpha = 0.86$ and 0.70, respectively.

Table 1. Demographic characteristics at baseline

Characteristic	MRT	TCE	MAP	AT	FET	*F*
N	26	21	21	27		
Mean age (SD)	71.4 (6.0)	69.8 (5.9)	72.9 (6.5)	70.4 (4.7)		1.18
Gender						
Males (%)	4 (15.4)	5 (23.8)	7 (33.3)	7 (25.9)	2.2	
Education						
None (%)	8 (30.1)	4 (19.0)	4 (19.0)	3 (11.1)		
Primary (%)	11 (42.3)	10 (47.6)	12 (57.1)	8 (29.6)	9.8	
Beyond primary (%)	7 (26.9)	7 (33.3)	5 (23.8)	15 (55.6)		
Marital status						
Single (%)	2 (7.7)	0 (0)	4 (19.0)	0 (0)		
Married (%)	14 (53.8)	16 (76.2)	11 (52.4)	14 (51.9)	18.8*	
Divorced/ separated (%)	0 (0)	2 (9.5)	0 (0)	6 (22.2)		
Widowed (%)	10 (38.5)	3 (14.3)	6 (28.6)	7 (25.9)		
Employment status						
Full-time employment (%)	2 (7.69)	0 (0)	1 (4.76)	0 (0)		
Part-time employment (%)	3 (11.5)	3 (14.3)	0 (0)	2 (7.4)	15.7	
Homemaker (%)	9 (34.6)	6 (28.6)	3 (14.3)	6 (22.2)		
Retired (%)	12 (46.2)	12 (57.1)	15 (71.4)	19 (70.4)		
Living arrangements						
Alone (%)	4 (15.4)	5 (23.8)	7 (33.3)	6 (22.2)	2.1	
Housing type						
One-two room PH (%)	0 (0)	2 (9.5)	3 (14.3)	3 (11.1)		
Three room PH (%)	4 (14.4)	3 (14.3)	7 (33.3)	5 (18.5)		
Four-five room PH (%)	18 (69.2)	15 (71.4)	10 (47.6)	16 (59.3)	11.4	
Executive/maisonette (%)	3 (11.5)	0 (0)	0 (0)	2 (7.4)		
Private housing (%)	1 (3.9)	1 (4.8)	1 (4.8)	1 (3.7)		
No. of medical conditions						
None (%)	5 (19.2)	1 (4.76)	3 (14.3)	4 (14.8)		
1	2 (7.7)	3 (14.3)	2 (9.5)	6 (22.2)	6.7	
2	8 (28.8)	7 (33.3)	7 (33.3)	4 (14.8)		
>2	11 (42.3)	10 (47.6)	9 (42.0)	13 (48.1)		
Mean SDS score baseline (SD)	28.6 (8.0)	35.2 (9.9)	34.1 (11.4)	31.0 (8.1)		2.50
Mean SAS score baseline (SD)	32.5† (4.7)	36.2 (4.4)	37.8† (7.3)	36.1 (4.7)		4.20*

*$P < 0.05$.

†Significantly different at the Bonferroni corrected $P < 0.0.0083$ level.

AT, Art Therapy. FET, Fisher's Exact Test; MAP, Mindfulness Awareness Practice; MRT, Music Reminiscence Therapy; PH, Public Housing; TCE, Tai Chi Exercise.

Attrition and adherence rates

Out of 101 participants enrolled into the study, 99 (98%) completed the study at 52 weeks. Two participants had passed away prior to completion of the study (Figure 1); their causes of death were bladder malignancy and pneumonia. Some participants were absent for certain intervention sessions but remained in the study. There was a mean individual participant attendance rate of 91%. For all of the intervention sessions, the mean attendance rate was 91%. However, mean attendance rates between the single intervention phase (95%) and combination intervention phase (88%) was significantly different.

Intervention outcomes

In the single intervention phase, the main effect of time was significant for both the SDS and SAS scores ($P < 0.001$); SDS and SAS scores fell significantly during this phase (Table 2). The interaction effect of time*group was not significant in any of the outcome variables ($P > 0.05$; Table 2), suggesting that the changes from baseline were not significantly different between treatment groups. Despite this, not all treatment groups had statistically significant score changes when compared to their respective baseline data. At the end of the fourth week, only MRT and AT treatment groups registered a significant decrease in SDS

Table 2. Changes in SDS and SAS scores from baseline, across the entire intervention duration

	MRT	TCE	MAP	AT	F_{time}	$F_{time \times group}$
SDS: M (SD)						
Separate phase						
Week 4	–2.95* (6.58)	–3.99 (9.30)	–2.22 (8.60)	–1.04 (5.79)	23.1†	1.18
Week 10	–4.80** (7.51)	–4.09 (9.47)	–6.91** (9.02)	–4.17** (5.78)		
Combined phase						
Week 24	-2.55** (7.95)				11.3†	
Week 52	-6.35*** (9.82)					
SAS: M (SD)						
Separate phase						
Week 4	0.19 (5.21)	–0.04 (4.17)	–0.32 (5.00)	–1.72* (3.94)	11.1†	1.85
Week 10	–0.40 (3.24)	–1.52 (4.86)	–4.21** (7.12)	–3.14*** (3.78)		
Combined phase						
Week 24	–1.32* (5.23)				8.89†	
Week 52	–3.32*** (5.23)					

*Significant change from baseline at $P < 0.05$; **Significant change from baseline at $P < 0.01$; ***Significant change from baseline at $P < 0.001$.
†$P < 0.001$.
AT, Art Therapy; M, Mean; MAP, Mindfulness Awareness Practice; MRT, Music Reminiscence Therapy; SAS, Zung Self-Rating Anxiety Scale; SD, Standard Deviation; SDS, Zung Self-Rating Depression Scale; TCE, Tai Chi Exercise.

and SAS scores, respectively ($P < 0.05$; Table 2). Subsequently in the 10th week, both MAP and AT treatment groups had significant decrements in SDS and SAS scores relative to baseline ($P < 0.01$; Table 2). MRT maintained significant reductions in SDS scores in week 10 ($P < 0.01$; Table 2).

In the combination intervention phase, the main effect of time was significant for both variables ($P < 0.01$; Table 2). Participants' SDS and SAS scores were significantly lower in the 24th and 52nd week relative to baseline (Table 2). However, it should be noted that, SDS and SAS scores had actually significantly increased in week 24 relative to week 10 ($P < 0.05$). SDS and SAS scores in week 52 were not significantly different from week 10 ($P > 0.05$).

Discussion

In its entirety, this psychosocial intervention program had a positive effect on depressive and anxiety symptoms after one year. However, positive changes in SDS and SAS scores in the individual intervention phase did not reach statistical significance in all groups (Table 2, Figures 2,3). While the scores at week 24 and week 52 were significantly lower relative to baseline (Table 2), week 24 scores were significantly higher than at 10 weeks and week 52 results not significantly different from week 10. This may be a result of a reduction in attendance rates during the combination phase. It is possible that seniors who were feeling better may have had less motivation to attend sessions thereby affecting the symptom scores at 24 and 52 weeks. It may also suggest that individual intervention programs for a time limited duration such as 10 to 12 weeks would be optimal for retaining elderly in activity programs and improving mental health.

Another explanation for the increase in mean SDS and SAS scores at week 24 compared to week 10 may be the reduction of opportunities for participants to voice their opinions or thoughts in a bigger group. This is especially relevant for therapies like MRT and AT. Future replication of this model can deliver the intervention in a larger group and break the participants into smaller discussion groups for more individualized attention.

TCE is noticeably absent in producing significant improvements in the single intervention phase, and this is unexpected given past research findings (Chou *et al*., 2004; Lavretsky *et al*., 2011; Wang *et al*., 2014). Conversely, AT and MRT showed significant decrements in symptoms. One possible explanation is that many participants in this study may have had past exposure to TCE. TCE is widespread in many community centers, and there are many Tai Chi interest groups in Singapore. A few years preceding this intervention program, there were government-linked committees promoting TCE to keep seniors active. In fact, a record was set in 2010 for the nation's largest Tai Chi mass display in the western region of Singapore, the same geographical area our participants were recruited from. Another plausible explanation is that TCE has less of an interactive component as compared to interventions like MRT or AT. The latter two

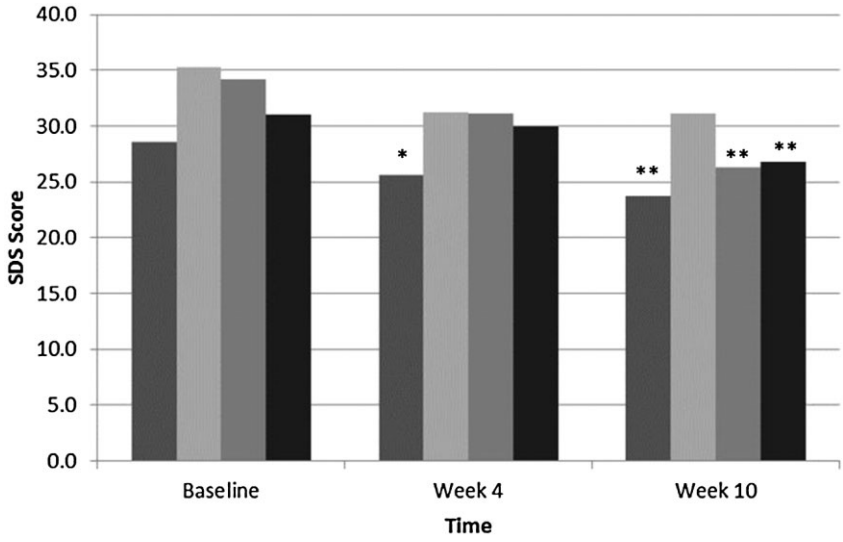

Figure 2. Zung Self-Rating Depression Scale scores from baseline to week ten. ■ MRT; ■ TCE; ■ MAP; ■ AT; AT, art therapy; MAP, mindfulness awareness practice; MRT, music reminiscence therapy; TCE, Thai Chi exercise.

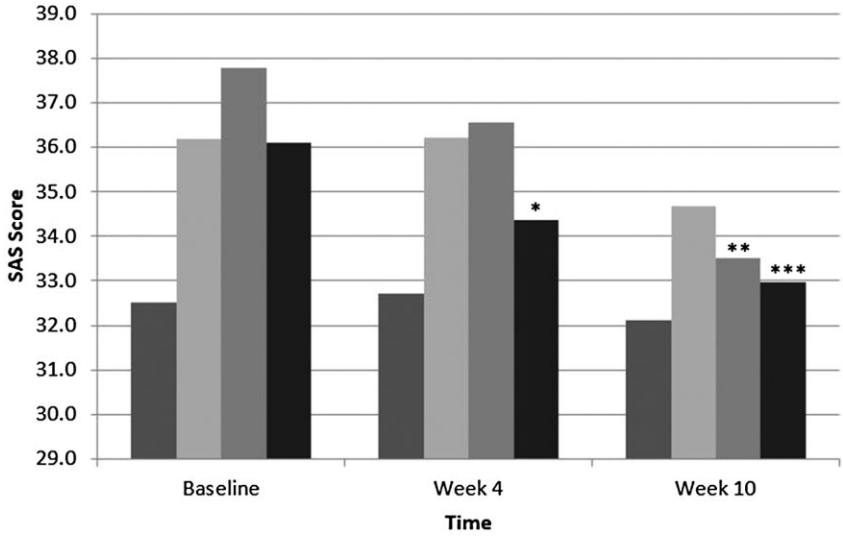

Figure 3. Zung Self-Rating Anxiety Scale scores from baseline to week ten. ■ MRT; ■ TCE; ■ MAP; ■ AT; AT, art therapy; MAP, mindfulness awareness practice; MRT, music reminiscence therapy; TCE, Thai Chi exercise.

interventions required more audience participation and interaction with the instructors. Moreover, they are rarely offered in a community setting conferring a novelty to the experience. Future similar studies could incorporate a qualitative component at baseline to evaluate participants past exposure to interventions and rate their expectation of improvement.

Low dropout rates in this study is testament to the acceptability of the interventions in this program. Higher attrition rates were seen for other conventional therapies including group therapy for older adults in previous studies (Stanley *et al.,* 2009; Wilkinson *et al.,* 2009; Krishna *et al.,* 2011). We postulate that eastern influences of our interventions, use of culturally appropriate and locally relevant examples during interactive components contributed to the program's acceptability. In addition, these therapies were delivered in a venue removed from a traditional treatment setting. The easily accessible location sited within a shopping center may have given the experience a more convivial feel, giving the elderly participants more incentive to attend these sessions. Moreover, the

participants' awareness that they were contributing to furthering scientific understanding may have had positive effects on their self-esteem and motivation to return to the center. Perhaps, for the purposes of primary prevention, i.e. preventing SSD and SSA from progressing to full-blown depression and anxiety, a slightly different approach may be required; a model similar to this community research center.

In Singapore, we have existing infrastructure in the form of senior activity centers all across the island that can support a large scale replication of this model of preventive psychiatry. Once we have sufficient evidence to clearly point to the beneficial effect of some of these activities and have information on the optimum frequency and duration, it will be relatively inexpensive and feasible to implement in these activity centers.

Limitations of this study include the small sample size and the lack of a control group. Instruments used to assess depression and anxiety were all self-rated. However, one meta-analysis showed that self-rated instruments are more conservative than clinician-rated instruments when assessing the outcomes of psychotherapy for depression (Cuijpers *et al*., 2010). Given the context in which these scales were administered and the general negative perception toward mental health, participants may have responded to some items based on what they deemed to be socially desirable. Assignment into groups were based on participants' choice and not randomized. Participants were not maintained in their initial treatment groups and the program evolved to tailor to participants' requests at 12 weeks. This self-selection into groups and subsequent combination is likely to have led to biases in SDS and SAS ratings. While we acknowledge that this was a methodological weakness, the program was initially conceptualized as a service and had to take into account end user preferences. Nevertheless, the reduction in symptoms provide good preliminary results for further randomized controlled trials to evaluate these interventions individually for prevention of late life depression and anxiety in the community. A randomized controlled trial evaluating mindfulness awareness practice is currently underway.

Conclusion

This approach to improving late-life mental health has shown promising results; participating in a chosen intervention led to positive improvements in SSD and SSA symptoms in this sample of community-dwelling older adults. This model of preventive psychiatry has the potential to encourage help seeking among the elderly with subthreshold symptoms and sustain their interest in mentally stimulating activities. Delivering psychosocial interventions in the community is a simple, inexpensive and culturally acceptable approach that should be adequately studied and replicated in other communities.

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