

Effects of Yoga on Sleep Quality and Depression in Elders in Assisted Living Facilities

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ABSTRACT

Background: Being relocated to an assisted living facility can result in sleep disturbances and depression in elders. This may be attributed to or worsened by lack of regular physical activity. Appropriate exercise programs may be an important component of quality of life in this group of transitional frail elders.

Purpose: This study aimed to test the effects of a 6-month yoga exercise program in improving sleep quality and decreasing depression in transitional frail elders living in assisted living facilities.

Methods: A quasi-experimental pretest-and-posttest design was used. A convenience sample of 69 elderly residents of assisted living facilities was divided randomly into a yoga exercise ($n = 38$) and control group ($n = 31$) based on residence location. A total of 55 participants completed the study. The intervention was implemented in three small groups, and each practice group was led by two pretrained certified yoga instructors three times per week at 70 min per practice session for 24 weeks. The outcome measures of sleep quality (Pittsburgh Sleep Quality Index) and depression state (Taiwanese Depression Questionnaire) were examined at baseline, at the 12th week, and at the 24th week of the study.

Results: After 6 months of performing yoga exercises, participants' overall sleep quality had significantly improved, whereas depression, sleep disturbances, and daytime dysfunction had decreased significantly ($p < .05$). In addition, participants in the intervention group had better results on all outcome indicators than those of participants in the control group ($p < .05$).

Conclusions and Implications for Practice: It is recommended that yoga exercise be incorporated as an activity program in assisted living facilities or in other long-term care facilities to improve sleep quality and decrease depression in institutionalized elders.

KEY WORDS:

depression, elder, sleep quality, yoga.

the traditional idea that adult children should care for their parents when they reach old age. However, family caregivers are no longer the only choice in today's Taiwanese society because of changes in family situations (Chiu, Chen, & Li, 2007). Some elders are now institutionalized in long-term care facilities when their health conditions deteriorate and dependency levels increase (Chen & Shyu, 2000; Chiu et al., 2007). Many elders respond negatively to institutional care, feeling that their families have abandoned them and reporting emotional and health issues related to relocation.

Researchers have found that relocation to an institution may result in adjustment problems such as depression for the elders (Hou & Chen, 2008; Hwang, 2007). The prevalence of depression among institutionalized elders has been reported at 39.2% in northern Taiwan (Lin, Yu, & Chang, 2004). In another study done in southern Taiwan, an even higher percentage of depression (81.8%) was reported among elderly nursing home residents (Lin, Wang, & Huang, 2007). Sleeping disturbances associated with aging are another common problem in institutionalized elders. In Taiwan, 69.3% of institutionalized elders were reported to have poor sleep quality (Lin, Su, & Chang, 2003). Sleep quality is a complex concept that involves objective and subjective aspects, including sleep duration, sleep latency, depth of sleep, and sleep restfulness (Buysse, Reynolds, Monk, & Berman, 1989). Good quality sleep is typically associated with fewer sleep disturbances. The three most commonly

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Introduction

Unlike Western society, traditional Taiwanese society is strongly influenced by filial piety, with most elderly parents expecting to receive family-centered care (Liu & Chuang, 2006; Wang & Davies, 2007). Taiwanese elders adhere to

reported sleep disturbances include difficulty initiating sleep, difficulty maintaining sleep, and early morning awakening (Ohayon, 2002). Sleep disturbances in older adults are attributed to inactive lifestyles, such as repetitive daily routines, lack of physical exercise, and poor sleep practices (e.g., excessive napping; Foley, Ancoli-Israel, Britz, & Walsh, 2004). One study found that elders who exercised regularly had better sleep quality (Lin et al., 2003). However, most elderly residents were reluctant to participate in activities (Lo, 2008). Nearly two-thirds (64%) did not exercise regularly due to a lack of appropriate activity programs in their institutions (Li, Chen, & Chiu, 2007).

Yoga, a type of mind–body–spirit exercise, is a holistic treatment for people with various somatic or psychological dysfunctions (Feuerstein, 2000). Studies of yoga-based interventions performed on healthy populations have shown that yoga decreased depression and anxiety (Pilkington, Kirkwood, Rampes, & Richardson, 2005; Waelde & Thompson, 2004; Woolery, Myers, Sternlieb, & Zeltzer, 2004). A yogic stretching and breathing program increased mood positively in a group of 71 adults of ages ranging from 21 to 76 years (Wood, 1993). The effects of yoga on mood were examined in 113 psychiatric inpatients. Results suggested that yoga was associated with improved mood and may be a useful way of reducing stress during inpatient psychiatric treatment (Lavey et al., 2005). Moreover, in a randomized trial on the effects of a yoga intervention in 39 patients with lymphoma, researchers found that participants in the yoga group reported significantly fewer sleep disturbances, better subjective sleep quality, faster sleep latency, longer sleep duration, and less use of sleep medications during follow-up compared with participants in the control group (Cohen, Warneke, Fouladi, Rodriguez, & Chaoul-Reich, 2004). Similar findings were reported in that yoga improved different aspects of sleep in a geriatric population after 6 months of practice (Manjunath & Telles, 2005). The group showed a significant decrease in time required to fall asleep, an increase both in the total number of hours slept, and in the feeling of being rested in the morning. In a recent study, our research group found that after 6 months of regular yoga exercise, sleep latency, daytime dysfunction, and depression of 128 adults of various ages decreased, whereas subjective sleep quality, physical health perception, and mental health perception improved (Chen et al., 2009). Building on prior research, the purpose of this study was to test the effects of a 6-month yoga exercise program on improving sleep quality and decreasing depression in transitional frail elders residing in assisted living facilities.

Methods

Design

This study used a quasi-experimental untreated control group design with one pretest and two posttests. Two

assisted living facilities were randomly assigned to either the intervention group or wait-list control group. Before the intervention started, all participants were examined to assess sleep quality and depression. These variables were examined again at 3-month and 6-month intervals after the intervention started to determine when the intervention achieved significant impact. These time points were chosen specifically to reflect the most frequent intervention periods suggested in the literature.

Setting and Samples

Following approval by the human subject protection committee and agency administrators, a convenience sample of 69 elders was recruited from two assisted living facilities. Samples were randomly assigned to the yoga intervention group ($n = 38$) or the wait-list control group ($n = 31$) based on the assisted living facilities where they resided. Inclusion criteria for participants included (a) transitional frail elders aged 65 years or older with a Barthel Index score of 91–99 (mildly functionally dependent), (b) no previous training in any forms of yoga, (c) ability to walk without assistance, and (d) cognitively intact as demonstrated by a Mini-Mental State Examination score of 24 or higher.

A total of 55 participants completed the 6-month study (retention rate: 80%): 10 participants withdrew three months into the study (intervention group = 6 participants; control group = 4 participants), and 4 participants withdrew between the 3-month and 6-month evaluation (intervention group = 1 participant; control group = 3 participants). Reasons for withdrawal from the intervention group included the following: moved out of the institution ($n = 5$) and lack of interest ($n = 2$). Participants withdrew from the control group for the following reasons: moved out of the institution ($n = 3$), physical discomfort ($n = 2$), and not interested ($n = 2$; see Figure 1). Using the Mann–Whitney U or the Pearson χ^2 tests to compare demographic profiles of the participants remaining in the study with those who withdrew in each group, no significant differences were found, indicating that those who remained in the study were representative of the general population.

Intervention

The silver yoga exercise program was implemented as the intervention. It is a safe and manageable yoga program specifically designed by our research group to accommodate the reduced body flexibility experienced by many elders (Chen, Tseng, Ting, & Huang, 2007). The program includes four phases: (a) warm-up (20 min): eight postures to loosen up the body structure, (b) hatha yoga (20 min): seven gentle stretching postures to increase range of motion and progressive muscle relaxation in older adults with special consideration for their physical abilities and tolerances, (c) relaxation (10 min): three activities to rest

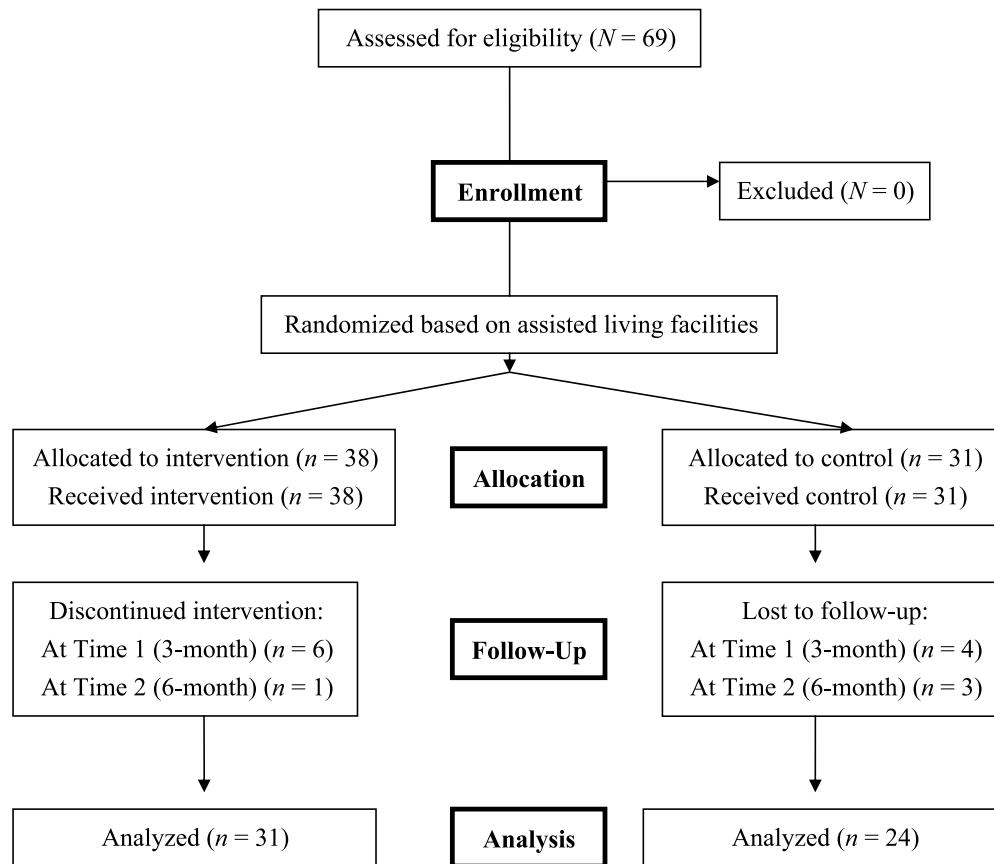


Figure 1. Flow diagram for participant participation.

the body, and (d) guided-imagery meditation (15 min): two imagery-guiding directions to facilitate a state of relaxation. A 5-min break is arranged between the warm-up and hatha yoga phases to accommodate the physical tolerance of elders. The entire program takes about 70 min to complete. Abdominal breathing is emphasized in each program phase. Silver yoga program postures are considered less strenuous than those used in traditional yoga (Chen et al., 2007).

Participants in the intervention group were divided into three groups of about 12 to 13 participants per group. Each group intervention was led by two certified silver yoga instructors, three times a week for 6 months. Referencing previous research experience (Chen, Chen, Wang, & Huang, 2005), the certified instructors selected were female adult volunteers, aged 48–60 years. To make this exercise program a part of the regular activities in the facility, selected instructors were required to be staff or volunteers already working at the facility. Instructors completed a 9-hr training course, which included 1 hr of yoga theory and use, 6 hr of technique learning and practice, and 2 hr of elderly education and group leading strategies. All instructors were certified by the principal investigator upon completion. To ensure intervention consistency across intervention groups and interrater reliability among instructors, a prerecorded tape made by the principal in-

vestigator verbally guided the intervention process and directed participants in performing each yoga posture. It was emphasized in the program that each posture was to be done gently and in moderation. Signs or symptoms of discomfort that occurred during any yoga session were required to be recorded by instructors. No such signs or symptoms occurred during any of the sessions. The attendance rate of the participants averaged 80.83%. Control group participants were instructed to follow their usual daily activities in the institution and invited to participate in silver yoga exercises after study completion.

Data Collection

Data were collected by a research assistant from March to October 2006. Two instruments, which had satisfactory psychometric properties and are commonly used by clinicians and researchers, were selected to measure the two main outcome indicators of the study.

Pittsburgh Sleep Quality Index

Sleep quality of participants was measured using the Pittsburgh Sleep Quality Index (PSQI), which is an 18-item self-report questionnaire that assesses quality of sleep and sleep disturbances over a 1-month period (Buysse et al., 1989). Sleep quality was defined to include quantitative

aspects of sleep (sleep duration, sleep latency, and number of arousals) and more purely subjective aspects (depth or restfulness of sleep). On the basis of this definition, the PSQI was composed of seven subscales: (a) subjective sleep quality (1 item): overall sleep quality of the respondent; (b) sleep latency (2 items): time spent trying to fall asleep each night; (c) sleep duration (1 item): hours of actual sleep each night; (d) habitual sleep efficiency (2 items): number of hours slept divided by number of hours spent in bed multiplied by 100; (e) sleep disturbances (9 items): frequency of trouble sleeping caused by certain events, such as coughing or snoring loudly, feeling chilly, or having bad dreams; (f) use of sleeping medications (1 item): frequency of taking medicine to help sleeping; and (g) daytime dysfunction (2 items): difficulties to stay awake while doing daily activities. Total possible scores range from 0 to 21, with higher scores indicating more severe complaints and worse sleep quality. A score of 5 and above on the PSQI total scale, computed as a sum of the seven subscales, was associated with clinically significant sleep disruptions, including insomnia and major mood disorders (Buysse et al., 1989). The Chinese version of the PSQI was available and was used in this study. A Cronbach's alpha of .76 was obtained based on the baseline scores of this study.

Taiwanese Depression Questionnaire

Level of depression was measured by the Taiwanese Depression Questionnaire, an 18-item scale used to measure the emotional feelings of respondents during the previous week (Lee, Yang, Lai, Chiu, & Chau, 2000). Participants were asked to rate their emotions on a Likert-type scale, ranging from 0 to 3, with 0 indicating that a described symptom happened for less than 1 day during the previous week, 1 meaning that a described symptoms happened between 1 and 2 days, 2 meaning that a described symptom occurred for 3 to 4 days, and 3 meaning a described symptom occurred for 5 to 7 days. Possible scores range from 0 to 54, with a score of 19 or higher indicating a tendency toward depression that warranted counseling and visits to the psychiatrist. In a previous sample of 107 Taiwanese community residents with a mean age 51.8 years ($SD = 14.7$ years), the Cronbach's alpha coefficient achieved .90, sensitivity achieved .89, and specificity achieved .92 at a cutoff score of 19 (Lee et al., 2000). On the basis of baseline scores for this study, a Cronbach's alpha of .90 was obtained.

Data Analysis

SPSS Version 17.0 (SPSS, Inc., Chicago, IL) was used to analyze data. Descriptive statistics such as mean, standard deviation, range, and frequency distribution were used to describe the demographics of each group. Pearson χ^2 or Fisher's exact test was used to test group differences in terms of demographic profiles. Mixed-design two-way analysis of variance (ANOVA) was used to detect variables in which time and group had interactive effects. For those where such an effect was identified, one-way repeated-measure

ANOVAs were performed to analyze the simple main effect of different time points on each group. To further understand group differences at 3 months out and at 6 months out (the end of the study), analysis of covariance was computed on those variables for which time and group had interactive effects using the pretest data as the covariate to offset group differences at the beginning of the study.

Results

Participants' Demographic Profiles

A total of 55 participants completed the study: 31 from the intervention group and 24 from the control group. The mean age of the sample was 75.40 years ($SD = 6.70$ years). Most of them were either young-old elders (65–75 years, 41.80%) or middle-old elders (76–85 years, 43.60%). The majority were women (52.70%), widowed (52.70%), and had a 6-year elementary school education or lower (81.80%). Most lived a healthy lifestyle without smoking (80.00%) or drinking habits (92.70%). More than half (58.20%) were regular exercisers who averaged 3.78 times ($SD = 3.38$ times) per week. The cognitive functions of participants were intact, with an average Mini-Mental State Examination score of 25.84 ($SD = 3.10$). Although the average Barthel Index score for participants was 99.55 ($SD = 1.74$; mildly dependent in self-care, such as bathing, eating, or toileting), more than half of the participants (65.50%) had chronic illnesses, with an average number of 1.22 ($SD = 1.13$), which further indicated that they were in a transitional frail state of health.

Nearly all demographic profile variables for participants in the two groups were similar. One notable exception was in terms of smoking habits (Fisher's exact test, $p < .001$). None of the participants in the intervention group was a smoker. However, nearly half of the participants in the control group reported having a smoking habit (45.80%).

Baseline Comparisons Between the Two Groups

Results of t tests indicated that sleep quality and depression did not differ significantly between the two groups (all $p > .05$). The total sleep quality score for the participants in the intervention group was 5.00 ($SD = 3.67$), which reached a clinically significant level of sleep disruption. Participants in the control group had a mean total sleep quality score of 4.88 ($SD = 4.00$; $t = .12$, $p = .905$). Mean scores for depression were 6.10 ($SD = 9.45$) for the intervention group and 5.96 ($SD = 4.64$) for the control group ($t = .07$, $p = .948$).

Interaction Effects Between Different Time Points and Different Groups

Results of a mixed-design two-way ANOVA indicated the presence of significant interaction effects between the two

TABLE 1.
Differences Among Baseline, Time 1 (3 months), and Time 2 (6 months) in Terms of Variables With Significant Interaction Effects on the Intervention Group (n = 31)

Variable	Baseline		Time 1		Time 2		F	P	Post hoc ^a
	M	SD	M	SD	M	SD			
PSQI total score ^b	5.00	3.67	4.97	3.66	3.48	2.95	4.13	.032*	Time 1 > Time 2
Sleep duration	0.74	1.00	0.84	1.07	0.65	0.88	0.40	.604	–
Habitual sleep efficiency ^b	0.65	0.99	0.65	1.05	0.42	0.81	0.92	.363	–
Sleep disturbances ^b	0.74	0.63	0.71	0.46	0.48	0.51	3.64	.039*	Time 1 > Time 2
Daytime dysfunction ^b	0.32	0.54	0.10	0.30	0.00	0.00	6.68	.007**	Base > Time 2
Depression ^b	6.10	9.45	4.74	8.16	3.03	6.71	8.04	.004**	Base > Time 2 Time 1 > Time 2

Note. –, post hoc analysis was not performed due to nonsignificant F value. PSQI = Pittsburgh Sleep Quality Index.
^aBonferroni post hoc test. ^bHigher score indicates worse situation.
 *p < .05. **p < .01.

TABLE 2.
Differences Among Baseline, Time 1 (3 months), and Time 2 (6 months) in Terms of Variables With Significant Interaction Effects on the Control Group (n = 24)

Variable	Baseline		Time 1		Time 2		F	p	Post hoc ^a
	M	SD	M	SD	M	SD			
PSQI total score ^b	4.88	4.00	5.46	3.86	7.21	4.32	5.93	.005**	Base < Time 2 Time 1 < Time 2
Sleep duration	0.67	0.96	0.79	1.02	1.38	1.10	6.45	.003**	Base < Time 2 Time 1 < Time 2
Habitual sleep efficiency ^b	0.46	1.06	0.71	1.16	1.08	1.02	3.82	.037*	Base < Time 2
Sleep disturbances ^b	0.46	0.59	0.79	0.51	0.88	0.34	7.00	.002**	Base < Time 1 Base < Time 2
Daytime dysfunction ^b	0.17	0.38	0.29	0.46	0.42	0.78	1.53	.229	–
Depression ^b	5.96	4.64	5.00	4.39	7.29	6.50	2.95	.081	–

Note. –, post hoc analysis was not performed due to nonsignificant F value. PSQI = Pittsburgh Sleep Quality Index.
^aBonferroni post hoc test. ^bHigher score indicates worse situation.
 *p < .05. **p < .01.

TABLE 3.
Comparisons Between Intervention and Control Groups in Terms of Variables With Significant Interaction Effects at the 3-Month Period of the Study (N = 55)

Variable	Adjusted M ^a		SS	df	MS	F	p
	I	C					
PSQI total score ^b	4.94	5.49	4.14	1	4.14	0.39	.534
Sleep duration	0.83	0.80	0.02	1	0.02	0.02	.902
Habitual sleep efficiency ^b	0.63	0.73	0.15	1	0.15	0.13	.725
Sleep disturbances ^b	0.67	0.84	0.36	1	0.36	1.76	.190
Daytime dysfunction ^b	0.09	0.30	0.56	1	0.56	3.82	.056
Depression ^b	4.69	5.06	1.86	1	1.86	0.27	.604

Note. I = intervention group; C = control group; PSQI = Pittsburgh Sleep Quality Index.
^aDue to group differences in baseline data, the adjusted mean was used to make data comparable. ^bHigher score indicates a worse situation.

TABLE 4.
Comparisons Between Intervention and Control Groups in Terms of Variables With Significant Interaction Effects at the 6-Month Period of the Study (N = 55)

Variable	Adjusted M^a		SS	df	MS	F	p
	I	C					
PSQI total score ^b	3.46	7.24	193.82	1	193.82	19.91	.001**
Sleep duration	0.64	1.39	7.64	1	7.64	8.59	.005*
Habitual sleep efficiency ^b	0.40	1.11	6.77	1	6.77	8.81	.005*
Sleep disturbances ^b	0.45	0.92	2.78	1	2.78	16.12	.001**
Daytime dysfunction ^b	0.00	0.42	2.33	1	2.33	0.88	.005*
Depression ^b	3.00	7.34	255.04	1	255.04	11.20	.002*

Note. I = intervention group; C = control group; PSQI = Pittsburgh Sleep Quality Index.

^aDue to group differences in baseline data, the adjusted mean was used to make data comparable. ^bHigher score indicates a worse situation.

* $p < .01$. ** $p < .001$.

groups at the three time points in terms of most of the variables: depression state ($F = 8.15$, $p = .002$), total sleep quality score ($F = 10.01$, $p < .001$), sleep duration ($F = 4.41$, $p = .019$), habitual sleep efficiency ($F = 4.36$, $p = .027$), sleep disturbances ($F = 9.20$, $p < .001$), and daytime dysfunction ($F = 6.33$, $p = .003$). Three variables that revealed no significant interaction effects included subjective sleep quality ($F = 2.57$, $p = .086$), sleep latency ($F = 1.98$, $p = .150$), and use of sleep medications ($F = 0.46$, $p = .579$).

Simple Main Effect of Different Time Points in Each Group

Intervention group

Results indicated that participant depression ($F = 8.04$, $p = .004$), sleep disturbances ($F = 3.64$, $p = .039$), and daytime dysfunction ($F = 6.68$, $p = .007$) decreased significantly, whereas overall sleep quality ($F = 4.13$, $p = .032$) was significantly enhanced (see Table 1).

Control group

In the control group, significant changes occurred in the following variables: overall sleep quality ($F = 5.93$, $p = .005$), sleep duration ($F = 6.45$, $p = .003$), habitual sleep efficiency ($F = 3.82$, $p = .037$), and sleep disturbances ($F = 7.00$, $p = .002$; see Table 2). However, these changes were not positive. Participants' overall sleep quality decreased, and sleep disturbances increased significantly. Although sleep duration increased, habitual sleep efficiency decreased significantly (see Table 2).

Group Differences at Each Time Point

Three-month time point

Participants in the intervention group had better results on all outcome indicators in comparison with the control

group. However, none were statistically significant at the 3-month point of the study (all $p > .05$; see Table 3).

Six-month time point

At the end of the sixth month in the study, the two groups had significant differences in all outcome variables (all $p < .05$; see Table 4). The overall sleep quality of participants in the intervention group was better than that of the control group ($F = 19.91$, $p < .001$). Intervention group participants also had less sleep disturbances, daytime dysfunction, and depression than those of their control group counterparts ($F = 16.12$, $p < .001$; $F = 0.88$, $p = .005$; and $F = 11.20$, $p = .002$; respectively). Although participants in the intervention group had shorter sleep duration ($F = 8.59$, $p = .005$), their habitual sleep efficiency was better than that of participants in the control group ($F = 8.81$, $p = .005$; see Table 4).

Discussion

Results indicate that, after 6 months of silver yoga exercise, the participants' overall sleep quality was significantly enhanced, and depression, sleep disturbances, and daytime dysfunction decreased significantly. This improved sleep quality, including less sleep disturbances and less daytime dysfunction, was congruent with previous studies (Cohen et al., 2004; Manjunath & Telles, 2005). Results found in this study further supported a previous study that applied the silver yoga exercise program in a community-dwelling elderly population (Chen et al., 2009), indicating that this exercise program could improve the sleep quality of both community and institutionalized elderly populations. The decrease in depression found in this group was also consistent with previous studies (Pilkington et al., 2005; Waelde & Thompson, 2004; Woolery et al., 2004).

Yoga, a meditative discipline, is a way of gaining insight into the nature of the mind and reality (Cameron, 2002). The practice of yoga heals and strengthens the body,

sharpens the mind, and calms the spirit. The elderly participants experienced stretching and relaxing in the program, and their bodies and minds were challenged and comforted at the same time, which might be the possible reason for enhanced sleep quality and decreased depression. A high attendance rate further supported the premise that participants enjoyed the program and were highly motivated and committed to participation.

Although participants in the intervention group had better results in all outcome indicators than those of their control group peers, outcome differences were not statistically significant at the halfway (3-month) point in the study, at which time only an improving trend could be observed. These nearly or not significant results may be due to the short duration of the 3-month intervention, which may not have been long enough to have a significant effect on the sleep quality and depression of some participants. The significant results found in the second posttest (6 months) further supported this. In addition, in subjective evaluations, participants expressed that they enjoyed the program very much; this opinion was supported by the high voluntary attendance rate.

Sleep duration and sleep efficiency are essential factors for good sleep quality and should be considered simultaneously. In this study, intervention group participants had shorter average duration of sleep but better habitual sleep efficiency than that of control group participants. This result conveyed a message that although the intervention group slept fewer hours than did the control group, they took less time to fall asleep, slept better, felt refreshed after waking up, and had better sleep quality. On the other hand, whereas control group sleep duration increased over the course of the study, habitual sleep efficiency decreased significantly. As stated previously, sleep disturbance in elders is attributed to inactivity that deprives the elders of physical exercise (Foley et al., 2004). Through the progression of a sequence of static physical postures, yoga uses stretching to massage blood vessels and improve blood circulation (Luskin et al., 2000). A 15-min guided-imagery meditation at the end of the yoga exercise program further facilitated a state of relaxation (Chen et al., 2007). The participants' bodies and minds were challenged and comforted at the same time, which led to more efficient habitual sleep.

Study Limitations

Although considerable efforts were made to design a sound study and significant outcomes were found in this study, there were several limitations. First, although the method of random assignment by study sites into groups was applied, it is possible that some elders who met the sample selection criteria but represented critical differences from the sample studied were not recruited due to their location of residence being outside targeted institutions. Second, more than half of the recruited participants

exercised regularly. Although the exercise habits were not significantly different among the participants in the two groups, without true randomization (random sampling and random assignment), these exercise behaviors might confound the study and weaken the interpretability of results. A randomized control trial with a large random sample might result in stronger causal relationships. Finally, a high withdrawal rate of 20% was observed in this study. Although no significant differences were found in the demographic profiles of the participants who remained and those who withdrew, a high withdrawal rate may weaken the interpretability of results.

Conclusions

This study revealed positive outcomes for applying the silver yoga exercise program with a sample of transitional frail elders. The beneficial effects of improving sleep quality and depression are applicable not only to community-dwelling elders (Chen et al., 2009) but also to transitional frail elders residing in assisted living facilities. It is recommended that the silver yoga exercise program be incorporated as an exercise activity in assisted living facilities or other long-term care facilities to improve sleep quality and depression in institutionalized elders. Further studies are needed to examine the applicability of this program to other elderly populations, such as an old-older adult population or frail elders at various levels of functional dependency.

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瑜珈運動改善養護機構老人之睡眠品質及憂鬱狀態

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- 背景** 遷居至機構對老人可能造成適應性問題，如睡眠困擾或憂鬱。少動之生活型態，如身體活動匱乏，可能是問題造成或加重之因。機構中適當運動方案之推行，對這群身體漸趨虛弱的老人而言相當重要。
- 目的** 測試六個月瑜珈運動方案，對養護機構身體漸趨虛弱、巴氏量表總分為91－99分輕度依賴老人之睡眠品質及憂鬱狀態改善成效。
- 方法** 採類實驗性、前後測設計。69位方便取樣之養護機構老人，依所居住之機構，隨機分派至瑜珈運動組（ $n = 38$ ）或控制組（ $n = 31$ ），其中55人完成六個月之研究。介入措施以三小組之團體方式進行，每週三次、每次70分鐘，為期24週。每小組之練習皆由二位領有結訓證書之瑜珈指導士帶領。依變項含睡眠品質（匹茲堡睡眠品質量表）及憂鬱狀態（台灣人憂鬱量表），於研究開始前、進行至第12週、及研究滿24週各測量一次。
- 結果** 六個月瑜珈運動後，研究個案之整體睡眠品質有顯著之改善，且憂鬱狀態、睡眠困擾及白天功能障礙亦明顯減少（所有 p 值皆 $< .05$ ）。除此之外，瑜珈組個案之所有依變項結果皆優於控制組（所有 p 值皆 $< .05$ ）。
- 結論／實務應用** 本研究建議，將瑜珈運動融入成為養護機構或其它長期照顧機構活動安排項目之一，以改善機構老人之睡眠品質及憂鬱狀態。

關鍵詞：憂鬱、老人、睡眠品質、瑜珈。

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