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Original Article

The Effects of Therapeutic Dogs Intervention on Happiness and Loneliness among Elderly Residents in Nursing Home

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SUMMARY

Background: The elderly usually have physiological and/or psychological dysfunction and need to stay in long term care facilities. But the changes in living environment or the systematic daily lifestyle in the long-term care facilities usually cause maladoption, increased loneliness and decreased happiness in the elderly. In this study, we used therapeutic dogs (TD) in animal-assisted therapy (AAT) in an attempt to improve the life quality of elderly people residing in a nursing home in Taiwan.

Methods: We used the pre-post test design and obtained repeated measures in a single group of elderly adults. We measured the longitudinal effect of happiness and loneliness of elderly residents before and one, two and three months after TD intervention, designated as M0 (baseline), M1 (one month after intervention), M2 (two months after), and M3 (three months after).

Results: In the aspect of happiness, elderly residents reported an increase of happiness scores across all three time points post intervention. There was an increase in happiness score of 1.056 (p < 0.05) between M1 and M0, 12.167 (p < .001) between M2 and M0, and 19.222 (p < 0.01) between M3 and M0. In the aspect of loneliness, there was no difference between M0 and M1. Loneliness was significantly decreased between M2 and M0 (score difference -2.289, p = .001) and also between M3 and M0 (score difference -1.976, p > .05), although in M3, the loneliness score was slightly higher than that in M2. Conclusion: This study provided a model of TD therapy to telderly and healthcare workers. It improved elderly happiness and some loneliness too. Further study and long term follow up is still needed.

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1. Introduction

Studies show that 64% of the elderly subjectively express unhappiness and loneliness after admission to long-term care institutions, especially those who are not voluntarily living there. In addition to the fact that most activities arranged by the long-term care institutions are stationary, the elderly have limited interactions with the outside world. Other factors such as limited family visitations also worsen the loneliness of the elderly residents. Unless the elderly residents have obvious behavioral or non-verbal incidents, such loneliness and unhappiness are difficult for the staff to discover. 1-4 For increase interactions with the outside world and activity participation of the elderly residents in long-term care institutions, animal-assisted therapy (AAT) has been frequently used in recent years. In AAT, professionals assign trained animals to patients to complete a series of tasks based on the patients' needs. The end goal is to facilitate the physiological, psychological, social, and spiritual functions of the patients and increase their quality of life.⁵ The dogs participating in the AAT are also called therapeutic dogs (TD). They need to be trained and need to pass health examinations and tests before becoming a TD.⁶

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Many studies show that AAT interventions have substantial and positive effects toward the cognitive function, verbal expression, depression level, aberrant behavior, social interaction, and living satisfaction for elderly residents in long-term care institutions. ^{7–11} However, in literature that evaluates the effectiveness of AAT, there is a lack of evaluation of loneliness and happiness of the elderly residents in long-term care institutions. Ryff C¹² believes that happiness cannot be measured by subjective positive/negative feelings or living satisfaction. He believes that happiness needs to be objectively evaluated with deep self actualization and multiple aspects. Happiness and loneliness are relatively subjective feelings; therefore, this study is focused on the investigation of happiness and loneliness of elderly residents in institutions, comparing happiness and loneliness of elderly residents before and one month, two months, and three months after AAT with TD in a nursing home.

2.Methods

2.1. Design

This was a single group repeated measures pre/post design study that compared the longitudinal effects of happiness and loneliness of elderly residents before and one, two and three months after the intervention. Study design was as Figure 1.

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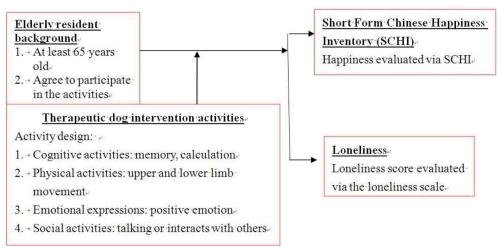


Figure 1. Study design of therapeutic dog (TD) intervention to elderly residents in the happiness and loneliness effects.

2.2. Sampling and case acceptance locations

After the study procedures and processes were approved by the MacKay Memorial Hospital Institutional Review Board of the hospital (17MMHISO15), it was carried out in a nursing home in northern Taiwan. The sampling method was purposive sampling. Subjects were included if they 1) were 65 years old or older; 2) agreed to interaction with dogs; 3) spoke and understood Mandarin or Taiwanese, and 4) consented to the study. Subjects were excluded if they 1) did not match the study inclusion criteria, 2) had clinical dementia rating (CDR) more than one, or 3) did not complete the study. The investigator explained the research details to the staff at the study site, met the patients and families to explain the study activities and rights, and carried out the activities after obtaining consent. Twenty-two residents were recruited and each allocated to treatment with a single therapeutic dog. Residents received treatments with the same therapeutic dog through all the sessions.

2.3. Study activities and data collection

In total, there were 12 weeks of activities, once a week, for 60 minutes each. The activities were divided into three phases: acquaintance phase, activity phase, and change phase. The activities were designed based on the daily activities of elderly residents and their pets at home. 13 The 12 weeks of activities were all led by the investigating team, with the same two well qualified therapeutic dogs. In order for dogs to qualify as a therapeutic dog, they must have passed a therapeutic dog examination and obtained a license. In addition, they must pass health examinations and renew their licenses every year. There is no restriction on the breed of the dogs.⁶ The pre-test and three post-test surveys were completed by the elderly residents under the assistance of the principal investigator after each of the activities. The principal investigator only explained the meaning of questions if residents did not understand the meaning of the questions; the investigator was careful to make sure that explanation of the questions did not influence the response to the surveys.

2.4 Data analysis

There were two evaluation tools used in the study. One was a 20-question Short Form Chinese Happiness Inventory (SCHI), and the other was a 9-question Chinese Loneliness Scale. The authors of both tools had agreed to our use. The SCHI was created by Lu Luo

and Shih, Chien-Pin in 1997 and had Cronbach α .95 of 0.66. ¹⁴ For each question, the responses were scored from 1 (no), 2 (somewhat), 3 (yes), to a maximum of 4 (very good). The maximum total score was 80 with higher scores representing more happiness. The elderly Loneliness Scale was created by Lin Qian-Li and Lin Mei-Jen in 2007. The overall Kuder-Richardson reliability (KR-20) of the scale was 0.67; the social loneliness reliability was 0.79, and emotional loneliness was 0.56. ¹⁵ There were five positive social loneliness questions (2, 4, 5, 7, 9) and four negative emotional loneliness questions (1, 3, 6, 8). "One" point was given to those who answered "no" in the positive questions and "one" point was given to those who answered "yes" in the negative questions. A higher score represented more elderly loneliness. The study data was analyzed with SPSS 18.0, including narrative and descriptive data analysis.

3.Results

3.1. Basic information of the elderly residents

There were a total of 22 elderly residents who participated in activities with therapeutic dog intervention. Three elderly residents were hospitalized or transferred to hospice due to disease. One elderly resident felt uninterested in the dogs after two therapy sessions and withdrew from the study. Eighteen elderly residents completed the 12 weeks of activities with therapeutic dog intervention. Seven (38.9%) elderly residents were male and eleven (61.1%) were female, with an average age of 74.56. Six residents (33.3%) each had completed middle school, high scool, and college, respectively. In terms of the health status of the elderly residents, eighteen had one or more chronic diseases; with Activities of Daily Living (ADL) scores ranging from 45 to 75. Nine residents were married and nine were widowed (50% each). Sixteen were involuntarily living at the institution. The duration of stay ranged from 1.4 to 7.6 years.

3.2. Pre and post-test analysis of the happiness and loneliness of the elderly residents

At one, two, and three months (M1, M2, and M3) after therapeutic dog intervention, the elderly residents were tested for happiness, and the results were compared to the tests before the intervention (M0). In Table 1, the happiness scores of the elderly residents increased in all three timepoints post intervention (M1, M2, M3) as compared to baseline, and scores increased progressively throughout the three timepoints, with the highest scores obtained

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at M3. M1 results were significantly higher than that at M0 (score difference 1.056, p < .05). Higher statistical significances were achieved when comparing scores obtained at M2 and M3 with the baseline, with score differences of 12.167, p < .001 and 19.222, p < .001 respectively. This showed that activities of TD had significant effects on the happiness of the elderly residents. Table 1 and Figure 2 showed the comparative effectiveness of the pre/post tests.

In loneliness study, there was no difference between the scores at M0 and M1. However, in M2, the loneliness of the elderly residents decreased significantly compared to that at M0 (score difference -2.289, p=.001). However, in M3, the loneliness score was slightly higher than that at M2; still, the score was significantly less than that at M0 (score difference -1.976, p>.05) as shown in Table 2 and Figure 3.

4. Discussion

After the TD intervention, the happiness of the elderly residents (Figure 2 and Table 1) improved at M1 and continued to increase at M2 and M3. The loneliness of the elderly residents did not change between M0 and M1 but decreased at M2. The elderly also had decreased loneliness in M3, though the score was slightly higher than that at M2. These results reveal that TD intervention had effects on the happiness and loneliness of the elderly residents. There were significant differences in the happiness scores of the elderly in all three post tests, while differences in loneliness were most significant at M2. It was difficult to explain all these facts in this small sample sized-study.

The animal interventions were focused on the daily lives of the elderly residents with their pets. They increased the interpersonal relationships between the elderly residents, allowing more interactions with the study team, and also more interactions between the elderly residents at the long-term care institution. Based on other studies, external factors such as increased exercise or leisure activi-

ties can influence the subjective happiness of the elderly. 16-18 Through activities with TD intervention, this study gave the elderly more opportunities to interact with others, support each other, participate in outdoor activities, and respond to external stimuli. Our findings were compatible with a previous study that suggested psychosocial interventions targeting coping resources may help older adults improve their happiness. ¹⁹ In 2010, Hsu and Tung²⁰ tested the correlation between happiness and adjustment difficulties using the variables of social and environmental support. The results showed that the elderly felt more happiness when are eager to face the support (effect = 0.206, p < .001). External factors such as social and environmental support also helped the elderly to cope with various situations. The increase of the happiness in the elderly were unanimous (effect = 0.151, p < .001). Internal factors such as personal health also influenced subjective happiness. Studies showed that almost all the elderly residents living in long-term care institutions in Taiwan had at least one chronic disease, with two thirds of the elderly residents having disabilities of varying severities. ^{21,22} The elderly residents in this study had similar health conditions as the ones in other studies. However, the happiness results of the TD interventions were not influenced by the health conditions of the elderly residents.

The loneliness results (Figure 3 and Table 2) showed that the TD interventions can decrease loneliness in elderly residents. Even though there were no differences before and one month after the intervention, the loneliness of the elderly residents decreased two months after intervention. Other studies showed that factors which influenced the loneliness of the elderly included loss of spouse, increased age, decreased physiological wellbeing, recent events, lack of attachment, and lack of social support. Since recent events could have affected the loneliness felt by our elderly residents, we conducted further investigation by interviewing the staff members of the long-term care institution. Results revealed that the elderly residents were affected by change of caregiver, no family visitation in

Table 1
Comparative effectiveness of the happiness of the elderly residents at four pre/post test points (N = 18).

Source	Time	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared	Noncent. parameter	Observed power ^a
Time	M1 vs. M0	20.056	1	20.056	5.594	.030	.248	5.594	.607
	M2 vs. M0	2664.500	1	2664.500	53.764	.000	.760	53.764	1.000
	M3 vs. M0	6650.889	1	6650.889	144.012	.000	.894	144.012	1.000
Error (time)	M1 vs. M0	60.944	17	3.585					
	M2 vs. M0	842.500	17	49.559					
	M3 vs. M0	785.111	17	46.183					

^a Computed using alpha = .05.

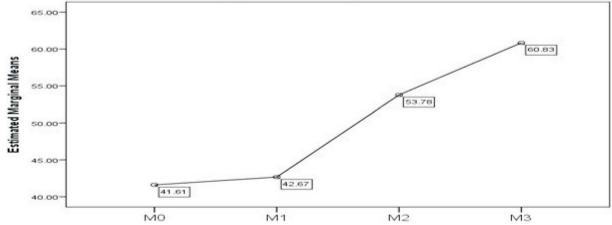


Figure 2. The scores of the happiness in the elderly residents at four pre/post test.

Table 2
Comparative effectiveness of the loneliness of the elderly residents at four pre/post test points (N = 18).

Source	Time	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared	Noncent. parameter	Observed power ^a
Time	M1 vs. M0	.222	1	.222	2.125	.163	.111	2.125	.280
	M2 vs. M0	43.556	1	43.556	15.284	.001	.473	15.284	.957
	M3 vs. M0	3.556	1	3.556	1.572	.227	.085	1.572	.220
Error (time)	M1 vs. M0	1.778	17	.105					
	M2 vs. M0	48.444	17	2.850					
	M3 vs. M0	38.444	17	2.261					

^a Computed using alpha = .05.

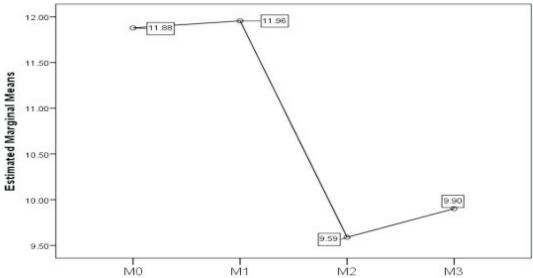


Figure 3. The scores of the loneliness in the elderly residents at four pre/post test.

a month, subjective disease progression, or fear of hospitalization. These recent events influenced the loneliness score at the final phase of the study. Therefore, just like the other studies, it showed that the subjective loneliness of the elderly residents can in fact be influenced by recent events.²³

The surveys were done at the end of the activities. The influence of the activities on the loneliness of the elderly residents still needs to be investigated. However, it does not explain why the happiness of the elderly residents continued to increase when it was also tested in the final month. Even though the results showed a decrease of elderly loneliness, there are two aspects of elderly loneliness, emotional and social loneliness. The emotional loneliness of the elderly residents has always been higher than social loneliness from before the TD interventions until the end. Emotional loneliness such as losing a spouse is more important in the subjective loneliness of the elderly.²⁴ This also explains why the social loneliness improvement was greater than the emotional loneliness improvement in this study. Half of the elderly residents in this study were widowed and 16 of them were involuntarily living there. TD intervention alone was unable to resolve the emotional burdens of factors like the loss of a spouse, decreased family visitation, and involuntarily admission, but they did not decrease the effectiveness of the TD interventions. The results of this study allow nursing professional to consider diverse activities over uniform activities when designing events for the elderly residents in long-term care institutions. They are more beneficial to the physiological, psychological, and social wellbeing of the elderly residents.

5. Conclusion

Our findings show TD intervention can increase happiness and

decrease loneliness in elderly residents. Through activities with TD intervention, this study allowed elderly residents to interact with others, provided support, increased their participation with outdoor activities and increased external stimulation. The limitations of this study are its small sample size, brief period of intervention, and setting at a single institution. Further studies should increase the numbers of institutions and increase sample size, consider adding a control group, prolong the study time and obtain more information on the physiological and psychological wellbeing of the elderly, such as financial status, family relationships, etc., which could possibly confound the results of the study.

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