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Videoconference program enhances social support, loneliness, and depressive status of elderly nursing home residents

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Videoconference program enhances social support, loneliness, and depressive status of elderly nursing home residents

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Objectives: The purpose of this quasi-experimental study was to evaluate the effectiveness of a videoconference intervention program in improving nursing home residents' social support, loneliness, and depressive status.
Methods: Fourteen nursing homes were selected from various areas of Taiwan by purposive sampling. Elderly residents ($N = 57$) of these nursing homes, who met our inclusion criteria were divided into experimental ($n = 24$) and control ($n = 33$) groups. The experimental group received five min/week of videoconference interaction with their family members for three months, and the control group received regular care only. Data were collected through face-to face interviews on social support, loneliness, and depressive status using the Social Supportive Behavior Scale, University of California Los Angeles Loneliness Scale, and Geriatric Depression Scale, respectively, at three points (baseline, one week, and three months after baseline). Data were analyzed using the generalized estimating equation approach.
Results: Subjects in the experimental group had significantly higher mean emotional and appraisal social support scores at one week and three months after baseline than those in the control group. Subjects in the experimental group also had lower mean loneliness scores at one week and three months after baseline than those in the control group, and lower mean depressive status scores at three months after baseline.
Conclusion: Our videoconference program alleviated depressive symptoms and loneliness in elderly residents in nursing homes. Our findings suggest that this program could be used for residents of long-term care institutions, particularly those with better ability to perform activities of daily living.

Keywords: videoconference; nursing home; elderly; social support; depression; loneliness

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Introduction

Older people's use of social support systems, in terms of quality and quantity, is closely related to both their health status and quality of life (Shin et al., 2008; Wang, Wu, & Liu, 2003). Social support is a multidimensional construct, including emotional, appraisal, instrumental (or tangible), and informational support (Wang et al., 2003; Weiss, 1974). One important aspect of social support for older nursing home residents is the continued involvement of family members (Maas et al., 2004).

However, one-third of nursing home residents were found to seldom have visitors (Gueldner, Clayton, Schroeder, Butler, & Ray, 1992), and six months after relocation to a nursing home, they have fewer visitors (Barry & Miller, 1980). Though family members may have limited time to visit the residents in person, language interaction via telephone may reduce the residents' loneliness (Hine & Arnott, 2002). With rapid advances in telecommunications technology, real-time audiovisual linkups are now possible between multiple centers via affordable hardware (Hui, Woo, Hjelm, Zhang, & Tsui, 2001).

Human communications are rich in both verbal and nonverbal elements, which provide the function of "social presence" and enrich communication (Short, Williams, & Christie, 1976). Videophones are increasingly used in western countries as a medium for communication between institutionalized elders and their families (Hensel, Parker-Oliver, & Demiris, 2007; Wickus & Luz, 2002). This research has demonstrated videophones as a feasible way to communicate for individuals with mild dementia and a full range of medical conditions, but the sample sizes were small. Thus, these findings need to be confirmed in larger studies.

Taiwan, in keeping with many other modern Asian countries, has recently experienced rapid social changes. Demographic and sociological trends, longer life span, low birth rate, smaller families, urbanization, and industrialization have contributed to changes in the health care system for older people (Lee, 2004). More and more older people are being cared for in nursing homes rather than by their adult children. Staff members at nursing homes in Taiwan have a heavy workload and spend the majority of their time on

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direct care, such as medication and wound care (Liu, 1998). With little chance to connect with other residents or nursing home staff, nursing home residents' social support is especially dependent on family visits and contacts.

Although videophone interventions have been shown in small studies to be a feasible technology for providing psychosocial benefit to both institutionalized residents and their families, this equipment (videophone) is expensive and unpopular in Taiwan. Since videophone seems not a feasible option for Taiwan, another consideration is videoconference. The benefits of videoconferencing in medicine have been recognized as a feasible way of delivering care to frail elders living with chronic diseases (Hine & Arnott, 2002). Internet videoconference programs have also been demonstrated as a feasible way to promote social interactions among non-speaking people living in the community (Hine & Arnott, 2002). Providing real-time audiovisual telecommunication systems to nursing home residents in Hong Kong (Hui et al., 2001) and Japan (Nakamura, Takano, & Akao, 1999) has been shown to add a new dimension for the majority who lack the skills and capacities to adapt to the nursing home environment. To date, little empirical data are available on videoconferencing or telemedicine for nursing home residents in Taiwan. Understanding the effectiveness of videoconference in Taiwanese nursing homes would fill the knowledge gap on this topic.

The objective of this study was to evaluate the effectiveness of a videoconference intervention program on nursing home residents' social support, loneliness, and depressive status.

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Methods

Design, sample, and setting

A quasi-experimental design was used in this study. Due to cost considerations, nursing homes were selected based on two criteria: size and accessibility to researchers. To compare participants in experimental and control groups, we needed at least 30 participants in each group (Cohen, 1992). We first obtained a list of 20 medium–large (>65 beds; Chen, Dai, Yang, Wang, & Teng, 1995) nursing homes from all over Taiwan that were accessible to the researchers. Each of these nursing homes was assigned a number. Nursing homes for the control group were randomly selected by number and were approached to recruit participants until we achieved our goal of 30 participants (two nursing homes). We then randomly selected nursing homes and participants for the experimental group. However, six nursing homes rejected participation in our research and few residents wanted to participate. Therefore, 12 nursing homes were approached to recruit 24 participants for the experimental group. In all, 14 medium–large nursing homes (total beds = 1811) participated in this study.

Residents of these nursing homes were recruited if they met the following criteria: (1) over 60 years old; (2) Mini-Mental State Examination (MMSE) score ≥ 16 for participants with no formal education or MMSE > 20 for elders with at least a primary school education (M.F. Folstein, S.E. Folstein, & McHugh, 1975; Liu, Dai, Lin, & Lai, 2000); and (3) their residence floor had wireless Internet access. These criteria were met by 215 residents, whose family members were invited to join this study. The majority of family members ($n = 154$, 71.4%) rejected to join our study. Their reasons included the following: unable to use videoconference technology (26.8%); no facilities (e.g., computer or Internet) (16.4%); no time to use videoconference technology (14.9%); perceived they visited residents very often (14.9%); residents not suitable for this program (10.4%); prefer in-person visits (10.4%); family factors (4.5%); and hired a nursing home aide, who provided support and companionship for the resident (1.7%).

Videoconference program

The videoconference program was designed for once a week (the in-person visiting frequency for the majority of families; Bitzan & Kruzich, 1990; Port et al., 2001) and to last for three months to provide time for adjustment to a new program (Brooke, 1987; Mikhail, 1992). The residents were helped to use the videoconference technology by a trained research assistant, who spent at least five min per week with the residents at the appointment time. The contact family member was the resident's spouse, child, or grandchild. The software at the facilities was either MSN or Skype via a 2 M/256 K wireless modem using a large (15.6 cm) laptop.

Study variables

Demographic indicators included participants' age, gender, marital status, educational background, duration of residency in the nursing home, and frequency of family visitations. The residents' physical status was measured at baseline by the Barthel Index (Mahoney & Barthel, 1965), which assesses the performance of activities of daily living (ADL), and their cognitive status was measured at baseline by the MMSE (Folstein et al., 1975). The MMSE cutoff score for severe cognitive deficit is ≥ 16 for participants without formal education and ≥ 20 for those with at least a primary school education (Liu et al., 2000).

Depressive status was measured by the Geriatric Depression Scale (GDS; Yesavage et al., 1983). The GDS has 30 items with a yes/no response set. Possible scores range from 0 to 30. The reliability was good in a previous study of nursing home elders (Tsai, Wong, Juang, & Tsai, 2004) and was 0.91 in this study. Loneliness was measured by the revised University of California at Los Angeles (UCLA) Loneliness Scale (Russell, Peplau, & Cutrona, 1980). The scale consists

of 10 items with a four-point Likert scale. Possible scores range from 20 to 80, with higher scores indicating more loneliness. The reliability of this scale was 0.87 in a study of institutionalized elders (Tsai, 2007) and was 0.91 in this study.

Social support was measured by a social support scale with three subscales: social support network, quantity of social support, and satisfaction with social support (Hsiung, 1999). Social support network was measured by the number of family members or friends who might contact the residents and the quantity of contacts (either by phone or in person) during the previous week. The quantity of social support was measured by asking the participants to rate each social support behavior (emotional, informational, instrumental, and appraisal support) offered by different providers (spouse, children, relatives, neighbors, and friends). This subscale uses a five-point Likert scale, with higher scores indicating more of each social resource. The subscale reliabilities for social support network, quantity of social support, and satisfaction with social support among nursing home residents were 0.81, 0.91, and 0.96, respectively (Tsai, Chung, Wong, & Huang, 2005), and 0.71, 0.92, and 0.77, respectively, in this study. Family involvement with residents was confirmed by asking the nursing home staff to record the number of visits and phone calls.

Procedure

The research was approved by Chang Gang University Institutional Review Board. Since nursing homes in Taiwan do not have institutional review boards, the authors also obtained permission to conduct this study from directors at each study setting prior to data collection. After this permission was granted, an announcement was posted at the nursing home entrance with details of our research procedure. We first asked the nursing home staff to speak with the residents who met our criteria and their family members about participating in this study. The residents and their family members who were interested in participating were contacted by the research assistant who explained the goals and methods of the study, their potential risks, their right to withdraw from the study at any time and to refuse to answer questions, and the strategies used to protect their confidentiality. After signing informed consent, the residents and family members made an appointment to use videoconferencing.

Data analysis

All data were coded before entering into a computer. Statistical calculations were performed using SPSS, Windows 15.0. The participants' demographic data were analyzed by descriptive statistics. Differences between groups were compared at three points (baseline, one week, and three months) using multiple linear regression of the generalized estimating equations (GEE; Liang & Zeger, 1986). To understand the effectiveness of the videoconference intervention on each variable, we constructed two regression models. The first model included only a fixed effect, whereas the second model was adjusted for resident's age and length of residency.

Results

Participants

A sample of 57 elderly nursing home residents was recruited for this study. The 24 participants in the experimental group were on average 74.42 years old (SD = 10.18) at baseline. The majority was female (58.3%) and widowed (75.0%), and 33.3% had no formal education. Their average MMSE and Barthel Index scores at baseline were 22.88 (SD = 3.95) and 62.71 (SD = 23.86), respectively, indicating good cognitive status and above-average performance of ADLs. They had on average 3.38 ± 1.61 children. Half of these participants (50.0%) were visited by a family member at least once a week and only 16.7% seldom had a family member visit them. Their average length of residency was 24.00 (SD = 26.51) months (Table 1).

The 33 participants in the control group were on average 78.48 years old (SD = 6.75) at baseline. The majority was female (57.6%) and had no formal education (57.6%), and 48.5% were widowed. Their average MMSE and Barthel Index scores were 22.15 (SD = 3.90) and 63.18 (SD = 22.94), respectively, indicating good cognitive status and above-average performance of ADLs. This average number of children was 3.64 ± 1.85. A little over half of these participants (63.6%) were visited by a family member at least once a week, and only 18.2% seldom had a family member visit them (Table 1). Their average length of residency was 33.12 months (SD = 31.49).

During the three months of this study, the control group lost five participants (one died, three relocated to home, and one developed cognitive deficit, leaving 28 participants (loss rate = 15.2%). In the experimental group, three participants withdrew (two declined to continue participating and one was hospitalized), leaving 21 participants (loss rate = 12.5%). Participants who withdrew from the two groups did not differ significantly from those who remained in any demographic characteristics except age ($t = -2.17$, $p = 0.04$).

Outcomes

Among the social support subscales, informational and instrumental social support had the highest scores in both groups. For depressive status, the mean scores for the intervention group at three time points were 13.63, 11.63, and 11.33, respectively, while the scores for the

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Table 1. Demographic characteristics of experimental and control groups.

Variable	Control group ($n=33$)		Experimental group ($n=24$)		t/χ^2 (p)
Age (years) (mean ± SD)	78.48	6.75	74.42	10.18	1.82 (0.08)
Gender (n, %)					1.00
Male	14	42.4	10	41.7	
Female	19	57.6	14	58.3	
Marital status (n, %)					3.90 (0.10)
Single	1	3.0	1	4.2	
Married	15	45.5	5	20.8	
Divorced	1	3.0	0	0	
Widow/widower	16	48.5	18	75.0	
Number of children (mean ± SD)	3.64	1.85	3.38	1.61	0.56 (0.58)
Education (n, %)					7.87 (0.11)
None/illiterate	19	57.6	8	33.3	
Primary	5	15.2	8	33.3	
Junior high school	1	3.0	2	8.3	
Senior high school	5	15.2	5	20.8	
≥College	3	9.0	1	4.3	
Residency (months) (mean ± SD)	33.12	31.49	24.00	26.51	0.77 (0.44)
ADL (mean ± SD)	63.18	22.94	62.71	23.86	0.07 (0.95)
MMSE (mean ± SD)	22.15	3.90	22.88	3.95	0.67 (0.51)
In-person visits					2.05 (0.61)
None/seldom	6	18.2	4	16.7	
Monthly	5	15.2	6	25.0	
Weekly (>two times/month)	21	63.6	12	50.0	
Daily (>five times/week)	1	3.0	2	8.3	
Telephone calls (number/week)					0.17 (0.67)
0	22	66.7	17	70.8	
1	8	24.2	5	20.8	
2–6	2	6.1	2	8.4	
≥7	1	3.0	0	0	

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control group were 11.67, 10.27, and 10.55, respectively. At baseline, the mean GDS scores of the two groups were not significantly different ($t=-1.52$, $p=0.13$). Loneliness scores at three time points for the experimental group were 50.58, 49.75, and 47.33, respectively, while scores for the control group were 46.55, 47.06, and 46.68, respectively. At baseline, the mean scores for loneliness of the two groups were not significantly different ($t=-1.51$, $p=0.14$) (Table 2). Only the baseline mean scores were compared for each variable, since GEE analysis only compares longitudinal mean changes.

Regarding depressive status, the mean change in the GDS scores at three months after baseline was shown by GEE analysis to be 1.4 points lower for the experimental group than for the control group, a significant difference ($p=0.02$; Table 3). After controlling for confounding variables (age, length of residency), the same results were obtained. Regarding the loneliness status, the change in the mean UCLA Loneliness Scale scores was significantly different in the experimental group from that of the control group at both one week (−1.21) and three months (−2.84). After controlling for confounding variables (age, length of residency), the change in the mean UCLA Loneliness Scale scores in the experimental group was still significantly different from that in the control group both at one week (−1.21) and three months (−2.84) after baseline.

These results indicate that depressive symptoms at three months and loneliness at one week and three months were significantly lower in the experimental group than in the control group. As for social support, the changes in mean appraisal and emotional social support scores in the experimental group were significantly different from those in the control group both at one week (0.42, 0.39) and three months (0.61, 0.68) after baseline (Table 3).

Discussion

This study demonstrated that a videoconference intervention provided elderly nursing home residents with emotional and appraisal social support, alleviated their loneliness at one week and three months, and improved their depressive status at three months. Our results on social support are somewhat different from a previous report that telephone and videoconference provided emotional, informational, and appraisal support to a web-based support group for mothers of mentally ill children (Scharer et al., 2009). This difference may be due to different study populations and research purposes; in our study, we did not focus on providing informational support to participants. Our research also revealed that videoconferencing, a computer-mediated communication, had no effect on instrumental social support, similar to other reports (Chang,

Table 2. Social support, depressive status, and loneliness by group at 1 week and 3 months.

	Control group ($n=28$)		Experimental group ($n=21$)		
Variable	Mean	SD	Mean	SD	p
Social support					
Emotional					
Baseline	9.62	1.47	9.21	1.46	0.29
One week	9.17	1.46	9.14	1.43	
Three months	9.32	1.48	9.46	1.57	
Informational					
Baseline	10.53	1.59	11.00	1.33	0.24
One week	10.33	1.32	11.06	1.32	
Three months	10.60	1.18	11.27	1.34	
Instrumental					
Baseline	10.32	1.00	10.41	0.96	0.74
One week	10.03	0.98	10.33	0.87	
Three months	10.31	0.84	10.22	1.12	
Appraisal					
Baseline	9.17	1.37	8.71	0.99	0.17
One week	8.76	1.22	8.77	1.11	
Three months	8.77	1.21	9.05	1.16	
Total social support					
Baseline	140.00	16.21	139.29	14.04	0.86
One week	135.36	15.16	138.88	14.30	
Three months	138.30	14.76	140.86	16.80	
Depressive status					
Baseline	11.66	4.40	13.63	5.28	0.13
One week	10.27	4.22	11.63	5.46	
Three months	10.50	3.82	11.33	4.98	
Loneliness					
Baseline	46.55	9.07	50.58	11.16	0.14
One week	47.06	8.75	49.75	11.79	
Three months	46.68	9.08	47.33	13.50	

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Ho, & Huang, 2008; Walther & Park, 2002). Based on our results, we suggest that family members should make up residents' informational and instrumental social support needs by combining videoconferencing with other kinds of visits. Further research is also suggested to understand whether videoconferencing would reduce the in-person visits of family members.

We found that videoconferencing effectively improved elderly residents' loneliness at one week and three months and depressive status at three months. These results are consistent with those of one study (Shapira, Barak, & Gal, 2007) showing that four months of computer use by 22 community-dwelling elderly people significantly reduced their depression ($F=10.00$, $p<0.01$) and loneliness ($F=34.71$, $p<0.001$) compared to a control group ($n=26$). However, our results are different from those of another study (White et al., 2002), which reported no significant difference in depression and loneliness among older adults after five months of training to access the Internet and e-mail. These differences may be due to different research periods; the longer the participants use the computer, the less it feels like a novelty and the incentive to use it is reduced. These results suggest that future research should follow up participants for a longer period (up to one year). Our finding that the experimental group had lower depressive scores than the control group may be due to their increased emotional and appraisal support, especially since these forms of social support were from their children and spouses, which would reduce their depressive status (Tsai et al., 2005).

Our finding that videoconferencing significantly reduced residents' loneliness may be due to the language interaction with their family members. However, further research is needed to clarify whether loneliness was reduced more by video interaction or by voice interaction (like telephone). Such research would help to understand the effectiveness of visits by telephone, in person, and videoconferencing.

This is the first study that used a larger sample size to understand the effectiveness of videoconference use in Taiwan. We found that about 25% of family members rejected a videoconference program because they preferred in-person visits (10.4%) or believed they already visited the residents very often (14.9%). This preference may be due to the Chinese cultural emphasis on filial piety (Lau, 1992; Tsai, Chen, & Tsai, 2008), which is traditionally expressed by in-person visits. Another reason for preferring in-person visits is that they may be perceived by family members as a form of care giving.

Furthermore, in-person visits may provide family members an opportunity to better understand the institution's care quality (Kellett, 1998) and to reduce family members' emotional stress (Gaugler, Zarit, & Pearlin, 2003; Lichtenberg, 2006). In contrast, videoconferencing may not feel as real to participants as in-person visits. Some Chinese family members might consider videoconferencing visits as unfilial behavior or be shy about the face-to-face contact of videoconferencing. Our results suggest that further studies are needed to understand the meaning of family visiting in Chinese society. For example, we suggest comparing the influence of different types of visits (in person, telephone, and videoconferencing) on the health of the residents and their families. Further study is also recommended to understand the differences between participants and nonparticipants in their perceptions of filial piety.

Our research also demonstrated that about 40% of family members rejected the option to join the videoconferencing program due to poor computer facilities at home or ability to use computers. This finding may be due to the nursing home residents' children also being old (50–60 years), a population with a low rate of computer or Internet use in Taiwan (Industrial Development Bureau, Ministry of Economic Affairs, 2008). Though 82.9% of homes in Taiwan owned a computer in 2008, the rate of two-generational families was 22.49–56.06% (Ministry of Interior, 2005), meaning that older people (residents' children) seldom live with their grandchildren. Thus, older people would not

Table 3. Effects of videoconference intervention on participants' social support, depressive status, and loneliness at one week and three months.

	Unadjusted				Adjusted[a]			
Variable	β	SE	X^2	p	β	SE	X^2	p
Total social support								
One week V *vs.* C	4.16	1.37	9.28	<0.01	4.16	1.37	9.28	<0.01
Three months V *vs.* C	2.94	2.40	1.49	0.22	2.89	2.41	1.44	0.23
Emotional								
One week V *vs.* C	0.42	0.13	9.99	<0.01	0.42	0.13	10.00	<0.01
Three months V *vs.* C	0.61	0.21	8.52	<0.01	0.61	0.21	8.44	<0.01
Informational								
One week V *vs.* C	0.27	0.15	3.16	0.08	0.27	0.15	3.16	0.08
Three months V *vs.* C	0.12	0.24	0.27	0.61	0.11	0.24	0.22	0.64
Instrumental								
One week V *vs.* C	0.18	0.13	1.97	0.16	0.18	0.13	1.97	0.16
Three months V *vs.* C	−0.23	0.18	1.65	0.20	−0.23	0.18	1.69	0.19
Appraisal								
One week V *vs.* C	0.39	0.15	6.53	0.01	0.39	0.15	6.53	0.01
Three months V *vs.* C	0.68	0.24	8.34	<0.01	0.68	0.24	8.13	<0.01
Depressive status								
One week V *vs.* C	−0.56	0.40	2.00	0.16	−0.56	0.40	2.00	0.16
Three months V *vs.* C	−1.40	0.61	0.22	0.02	−1.40	0.61	5.22	0.02
Loneliness								
One week V *vs.* C	−1.21	0.50	5.95	0.02	−1.21	0.50	5.95	0.02
Three months V *vs.* C	−2.84	1.28	4.89	0.03	−2.84	1.28	4.90	0.03

Notes: V, Videoconference group and C, Control group.
[a]Adjustment for residents' age and length of residency.

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only be unlikely to learn using computer, but also not have computer facilities at home.

The main source of social support resources for elderly nursing home residents is their children (Barron, Foxall, Dollen, Jones, & Shull, 1994; Hsu, 1993; Shanas, 1980; Tsai et al., 2005). However, others can also play an import role in providing social support. For example, elderly residents in Taiwanese nursing homes have been shown to receive support from nurses or nursing aides (Lin, Wang, & Huang, 2007). The major social support behaviors for institutionalized Chinese elders are informational and instrumental social support, with appraisal social support as the least important (Tsai et al., 2005).

Limitations

Over two-thirds of the family members recruited (71.4%) rejected the option to join our study, and we did not recruit elderly participants with severe cognitive deficits. These characteristics of our sample might limit the generalization of our results. Furthermore, the follow-up period of our study was three months, which limits the understanding of our program's long-term (one year) effectiveness. Therefore, we suggest that future studies overcome these limitations by offering the residents and family members a brief workshop in using the technology or by inviting a grandchild or young family member to take the workshop with them.

Conclusion

Once-a-week videoconferencing effectively improved the nursing home residents' emotional and appraisal social support, depressive status, and loneliness. However, this computer-mediated communication had no effect on instrumental and informational social support, suggesting the need for further study to compare the effectiveness of different types of visits (videoconferencing, in person, and telephone) over a longer period.

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References

Barron, C.R., Foxall, M.J., Dollen, K.V., Jones, P.A., & Shull, K.A. (1994). Marital status, social support, and loneliness in visually impaired elderly people. *Journal of Advanced Nursing, 19*, 272–280.

Barry, J.T., & Miller, D.B. (1980). The nursing home visitor: Who, when, where and for how long? *Long-Term Care and Health Services Administration, 4*, 261–274.

Bitzan, J.E., & Kruzich, J.M. (1990). Interpersonal relationships of nursing home residents. *Gerontologist, 30*, 385–390.

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Brooke, V. (1987). *Adjustment to living in a nursing home: Toward a nursing intervention*. Unpublished doctoral dissertation, University of Utah, Salt Lake City.

Chang, H.J., Ho, M.H., & Huang, C.J. (2008). Typology of online social support: A study of Bulletin board system in Taiwan. *Mass Communication Research, 94*, 61–105.

Chen, Y.J., Dai, Y.T., Yang, C.T., Wang, T.J., & Teng, Y.H. (1995). *A review and proposal on patient classification in the long-term care system*. Republic of China, Taiwan: Department of Health (in Mandarin).

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.

Folstein, M.F., Folstein, S.E., & McHugh, P.R. (1975). Mini-mental state examination: A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12*, 189–198.

Gaugler, J.E., Zarit, S.H., & Pearlin, L.I. (2003). Family involvement following institutionalization: Model nursing home visits over time. *International Journal of Aging and Human Development, 57*, 91–117.

Gueldner, S.H., Clayton, G.M., Schroeder, M.A., Butler, S., & Ray, J. (1992). Environment interaction patterns among institutionalized and non-institutionalized older adults. *Physical and Occupational of Therapy in Geriatrics, 11*, 37–53.

Hensel, B.K., Parker-Oliver, D., & Demiris, G. (2007). Videophone communication between residents and family: A case study. *Journal of the American Medical Directors Association, 8*, 123–127.

Hine, N., & Arnott, J.L. (2002). A multimedia social interaction service for inclusive community living: Initial user trials. *University Access Information Society, 2*, 8–17.

Hsiung, H.F. (1999). *Health status, social support and related factors among community-dwelling elderly living alone*. Unpublished master's thesis, National Taiwan University, Taipei.

Hsu, Y.C. (1993). *Correlation study of the attitudes toward old age, social support, self-reported health condition and depression of the age between 65 to 74 years old adults at Lukang community*. Unpublished master's thesis, National Taiwan Normal University, Taipei.

Hui, E., Woo, J., Hjelm, M., Zhang, Y.T., & Tsui, H.T. (2001). Telemedicine: A pilot study in nursing home residents. *Gerontology, 47*, 82–87.

Industrial Development Bureau, Ministry of Economic Affairs (2008). *The investment of the usage of Internet in Taiwan*. Industrial Development Bureau, Ministry of Economic Affairs, Taipei.

Kellett, U.M. (1998). Meaning-making for family carers in nursing homes. *International Journal of Nursing Practice, 4*, 113–119.

Lau, D.C. (1992). *Confucius. The Analects*. Hong Kong: The Chinese University Press.

Lee, M.D. (2004). *Cultural role expectations and attachment style among intergenerational Taiwanese caregivers of cognitively impaired aging relatives*. Unpublished doctoral dissertation, University of Rochester School of Nursing, San Francisco, USA.

Liang, K.Y., & Zeger, S.L. (1986). Longitudinal data analysis using generalized linear models. *Biometrika, 73*, 13–22.

Lichtenberg, R. (2006). Disappointment, not burnout. *Archives of Internal Medicine, 166*, 1422; author reply 1423–1424.

Lin, P.C., Wang, H.H., & Huang, H.T. (2007). Depressive symptoms among older residents at nursing homes in Taiwan. *Journal of Clinical Nursing, 16*, 1719–1725.

Liu, C.D. (1998). *Analysis of the time distribution of nursing activity and nursing manpower allocation in a nursing home – with the nursing home of Yunlin hospital as a case study*. Unpublished master's thesis, Yun-Lin Technology University, Yun-Lin.

Liu, C.K., Dai, D., Lin, R.T., & Lai, C.L. (2000). Epidemiology of Dementia in Taiwan. *Research in Applied Psychology, 7*, 157–169.

Maas, M.L., Rees, D., Park, M., Specht, J.P., Schutte, D., Kelly, L.S., … Buckwalte, K.C. (2004). Outcomes of family involvement in care intervention for caregivers of individuals with dementia. *Nursing Research, 53*, 76–86.

Mahoney, F.I., & Barthel, D.W. (1965). Functional evaluation: The Barthel Index. *Maryland State Medical Journal, 14*, 61–65.

Mikhail, M.L. (1992). Psychological responses to relocation to a nursing home. *Journal of Gerontological Nursing, 18*, 35–39.

Ministry of Interior (2005). *Statistics of the Ministry of Interior*, Taiwan, from http:/www.moi.gov.tw/W3/stat/home.asp.

Nakamura, K., Takano, T., & Akao, C. (1999). The effectiveness of videophones in home healthcare for the elderly. *Medical Care, 37*, 117–125.

Port, C.L., Gruber-Baldini, A.L., Burton, L., Baumgarten, M., Hebel, J.R., Zimmerman, S.I., & Magaziner, J. (2001). Resident contact with family and friends following nursing home admission. *Gerontologist, 41*, 589–596.

Russell, D., Peplau, L.A., & Cutrona, C.E. (1980). The revised UCLA loneliness scale: Concurrent and discriminate validity evidence. *Journal of Personality and Social Psychology, 39*, 472–480.

Scharer, K., Colon, E., Moneyham, L., Hussey, J., Tavakoli, A., & Shugart, M. (2009). A comparison of two types of social support for mothers of mentally ill children. *Journal of Child and Adolescent Psychiatric Nursing, 22*, 86–98.

Shanas, E. (1980). *The health of elderly people: A social survey*. New York: Arno Press.

Shapira, N., Barak, A., & Gal, I. (2007). Promoting older adults' well-being through Internet training and use. *Aging and Mental Health, 11*, 477–484.

Shin, J.K., Kim, K.W., Park, J.H., Lee, J.J., Huh, Y., Lee, S.B., … Woo, J.I. (2008). Impacts of poor social support on general health status in community-dwelling Korean elderly: Results from the Korean longitudinal study on health and aging. *Psychiatry Investigation, 5*, 155–162.

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. New York: John Wiley & Sons.

Tsai, Y.F. (2007). Self-care management and risk factors for depressive symptoms among Taiwanese institutionalized residents. *Nursing Research, 56*, 124–131.

Tsai, H.H., Chen, M.H., & Tsai, Y.F. (2008). Perceptions of filial piety among Taiwanese university students. *Journal of Advanced Nursing, 63*, 284–290.

Tsai, Y.F., Chung, J.W.Y., Wong, T.K.S., & Huang, C.M. (2005). Comparison of the prevalence and risk factors for depressive symptoms among elderly nursing home residents in Taiwan and Hong Kong. *International Journal of Geriatric Psychiatry, 20*, 315–321.

Tsai, Y.F., Wong, T.K.S., Juang, Y.Y., & Tsai, H.H. (2004). The effects of light therapy on depressed elders. *International Journal of Geriatric Psychiatry, 19*, 545–548.

Walther, J.B., & Park, M.R. (2002). Cues filtered out, cues filtered in: Computer-mediated communication and relationships. In M.L. Knapp & G.R. Miller (Eds.), *Handbook of interpersonal communication* (2nd ed., pp. 529–563). Thousand Oaks, CA: Sage.

Wang, H.H., Wu, S.Z., & Liu, Y.Y. (2003). Association between social support and health outcomes: A meta-analysis. *Kaohsiung Journal of Medical Sciences, 19*, 345–351.

Weiss, R.S. (1974). The provision of social relationships. In Z. Rubin (Ed.), *Doing unto others-joining, modeling, conforming, helping, loving* (1st ed., pp. 17–26). Englewood Cliffs, New Jersey: Prentice Hall.

Wickus, M., & Luz, C. (2002). Televisits: Sustaining long distance family relationships among institutional elders through technology. *Aging and Mental Health, 6*, 387–396.

White, H., McConnell, E., Clipp, E., Branch, L.G., Sloane, R., Pieper, C., & Box, T.L. (2002). A randomized controlled trial of the psychosocial impact of providing internet training and access to older adults. *Aging and Mental Health, 6*, 213–221.

Yesavage, J.A., Brink, T.L., Rose, T.L., Lum, O., Huang, V., Adey, M., & Leireb, V.O. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research, 17*, 37–49.

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