Social isolation and telecommunication in the nursing home: A pilot study

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D. Meyer, T. Marx, V. Ball-Seiter, Social isolation and telecommunication in the nursing home: A pilot study. Gerontechnology 2010; 10(1):51-58; doi:10.4017/gt.2011.10.01.004.00 **Objectives** Conduct an exploratory study to determine the degree of isolation and depression levels among rural nursing home residents, their perception of communication with family members who live too far away to visit regularly, and the interest and perception of telecommunication through webcams. In addition, the willingness among friends and family to finance all or part of telecommunication devices used on their end was studied. **Design** Potential participants were identified through chart reviews conducted by a trained graduate assistant (GA). The GA obtained signed consents and then administered the survey instruments. The nursing home residents were asked for the names and addresses of family members living at least 97 kilometers from the facility. We sent letters explaining the study along with a consent form and the study instruments. **Setting** 3 rural nursing homes **Participants** 33 nursing home residents age >65 years and 16 friends and family members. **Measurements** The following tools were used: (i) Geriatric Depression Scale (GDS); (ii) Minimum Data Set (MDS) 2.0 from the nursing home for assessment of social engagement, cognitive and physical function, ADLs, and health care needs; (iii) Perception survey of nursing home residents; and (iv) Family and friends survey. **Results** Sixteen (49%) nursing home residents were dissatisfied with their current level of communication with friends and family. Twenty-seven nursing home residents (82%) stated that they were interested in trying webcams as did 13 friends and family members. The GDS identified 15 (46%) residents and the MDS 13 (41%) with mild or severe depression. Data from the MDS suggest loneliness and social isolation, especially when coupled with the high percentage of patients who go a week or more without visitors (58%) and the number of individuals who needed extensive support with activities of daily living (58%) or were totally dependent (15%). No relation was found between wishing to use a webcam to communicate with far-away family or friends, and parameters of the nursing home residents. Conclusion This study identified a need for better or more contact and willingness on the part of both the residents and their family and friends to try and enhance communication with telecommunication devices.

Keywords: telecommunication, webcams, loneliness, social support

Nursing home residents are more likely to become lonely and socially isolated than older adults dwelling in the community[1-3]. They are also more likely to experience negative health outcomes, such as higher rates of depression, cognitive disabilities and decreases in activities of daily living[4-6]. Decreased social networks can negatively impact both physical and mental health outcomes[4-6]. Increased social support can decrease social isolation and depression and positively affect health and life satisfaction[3]. Family contact provides an important source of social support to residents and can possi-

bly strengthen relationships between nursing home staff and the family[6,7]. In fact, the elderly have "consistently ranked relationships with family and friends second only to health as the most important area of life"[8].

In rural regions, a number of barriers, such as lack of public transportation and long distances, may further increase isolation if family members and friends live outside the region. One way to bridge distances between family and nursing home residents is with telecommunication devices, such as webcams and videophones. The advantage of telecommunication over traditional modes, such as telephones, is the visual component. The addition of the visual cues improves communication bandwidth, which is defined as the numbers and types of communication cues a technology can accommodate[3]. Greater communication bandwidth facilitates a greater sense of what Short et al.[9] label social presence. Social presence is a critical factor in any communication medium which refers to dimensions related to the degree of interpersonal contact and the capacity to transmit information about facial expression, direction of gaze, posture, dress and non-verbal vocal cues[10].

Daft and Lengel's Media Richness Theory[11] contends that media vary in information richness based on their capacity to facilitate shared meaning within a given time interval: the more immediate the feedback and the greater the number of nonverbal cues, the richer the media. Therefore, face-to-face interactions and video conferencing are 'richer' than either telephone communication or email. In general, when verbal and nonverbal cues are removed there is a loss of social presence[11]. Media with fewer cues are viewed as more impersonal, less friendly, more task oriented, and even somewhat depersonalizing.

Telecommunication devices may offer greater social presences and a richer way to communicate thus enhancing interactions, especially for those residents who have limited face-to-face contact with friends and/or family. In fact, several studies dealing with videophones and seniors documented positive results for elders, their friends and/or family and providers[12-15]. The literature suggests that videophone contact may not only lessen social isolation and loneliness experienced by residents and decrease symptoms of anxiety or agitation, but also the guilt and worry of families who may live too far to visit regularly[2,16].

Telecommunication devices provide a low-cost intervention that could improve the quality of relationships of institutionalized elderly, especially for those who have no or few family and/or friends living close enough to visit regularly. Studies done with videophones found benefits for both nursing home residents and family members[2,3,13,14,17]. In fact, one author who examined the use of videophones with nursing home patients concluded: "Given the decrease of social networks in late life, enhancing the quality of remaining relationships is an important finding from this study"[16].

The objectives of this exploratory study were to determine if there is a need for improved communication between nursing home residents and their family and/or friends and if there is an interest among both nursing home residents and their family and/or friends to use webcams to improve communication. We examined (i) the degree of isolation among rural nursing home residents; (ii) depression levels among nursing home residents; (iii) nursing home residents' perception of communication with family members who live too far away to visit regularly; (iv) interest among nursing home residents and their family members to communicate via webcams; (v) family members' perception of communication between them and the nursing home resident; and (vi) a willingness among friends and family to finance all or part of webcams used on their end. Additionally, we developed and piloted survey questions that provide a measurement of social interaction and isolation that we could employ in a larger study that examines the impact of telecommunication use on isola-

tion and depression levels. The findings will be used to implement a larger study that examines pre- and post-levels of depression, isolation, and satisfaction following the use of telecommunication to communicate with family members and/or friends.

Methodology

After receiving approval from the University's institutional review board (IRB) we conducted a pilot study of nursing home residents aged 65 years or older and their friends and family to examine and explore the study objectives.

For this study we focused on webcams, which we described in letters to patients and their families. The nursing homes expressed an interest in creating 'televisit' carts that would provide portability so that even bedridden patients can participate. The nursing homes would optimally set up carts that would include a computer with a large screen and webcam. All the facilities have internet connections although connectivity varies among the family and/or friends' homes. By using services such as Skype, the connections between nursing home residents and the family and/or friends would be free, making the program sustainable once the initial equipment is purchased.

Sample

Potential participants were identified through chart reviews conducted by a trained graduate assistant (GA) and through recommendations from the directors of nursing at three rural nursing homes. Inclusion criteria: (i) Age ≥ 65; and (ii) Resident of the nursing home for at least 6 months (more likely to be permanent resident rather than there for an acute condition or rehabilitation). Exclusion criteria: (i) Dementia; or (ii) Unable to sign consent form. Although residents may have some contacts locally, all had significant relationships with those that lived more than 97 kilometers away and were unable to visit regularly.

Once identified, these individuals were approached by the GA and provided information concerning the study. If they were interested in participating, the GA obtained signed consents and then administered the survey instruments and collected data from the Minimum Data Set (MDS) previously gathered by nursing home staff.

Once signed consent was obtained, the nursing home resident was asked for the names and addresses of family members living at least 97 kilometers from the facility. We sent letters explaining the study along with a consent form and the study instrument.

Instruments

We used the Geriatric Depression Scale (GDS) to gauge depression among this cohort. The GDS is a 30-item self-report questionnaire rated using a 'yes/no' format. Items endorsed by participants are summed. Scores of 0-10 are considered non-depression, 11-20 mild depression, 21-30 moderate to severe depression. The measure has been found to have acceptable psychometric properties including adequate sensitivity (84%), specificity (95%)[18], internal reliability (r=0.94)[19]; and test-retest reliability over a one-month period (0.94)[20]. As noted in the approved IRB application and consent forms, we notified the directors of nursing if one of their residents had a score of 20 or more, which would indicate a possible worsening of depression.

Loneliness is subjective and can be interpreted from several different perspectives. We focused on issues relating to social support and communication and thus employed questions that attempted to examine perceptions of relationships and social activity.

We used the Minimum Data Set (MDS) 2.0[21] full assessment from the nursing home to assess social engagement, cognitive and physical function, ADLs, and health care needs. The MDS is part of the U.S. federally mandated process for screening assessment of all residents in Medicare or Medicaid certified nursing homes. This also provides data about relationship(s) with family members. We selected several items from the MDS as

*Table 1. Isolation indicators among 33 nursing home residents; MDS=Minimal Data Set 2.0 from the nursing home[21]; MDS-Section ACs=Daily contact with friends and/or family upon admission; MDS-Section E1p=Reduced social interaction; MDS-Section F1e=Pursues involvement in life of facility; SS=Study survey; *=item included in social isolation score construct*

Indicator	Instrument	Frequency				
		Yes		No		Missing
		n	%	n	%	n
Daily contact with friends and/or family upon admission	MDS-Section ACs	23	79	6	21	4
Being visited at least monthly (self-reported)	SS	21	64	12	36	0
Family lives far away	SS	33	100	0	0	0
Adequate social support from family and/or friends*	SS	17	52	16	49	0
Satisfied with communication level with family and/or friends*	SS	17	52	16	49	0
Reduced social interaction	MDS-Section E1p	28	93	2	7	3
Pursues involvement in the facility	MDS-Section F	1	3	29	97	3
Extent of health interference with social activities*	SS	5	17	25	83	3
Times of health interference with social activities (yes=sometimes to always; no=seldom to never)*	SS	5	17	25	83	3

well as conducted a short study survey that explored issues identified in the literature as indicators of loneliness: social disconnectedness, lack of social support or network, low participation in social activities, and impact of health on social interactions[1,6]. The items for this pilot were selected to explore possible isolation issues, which can be examined more closely in a future study.

A short survey was taken of nursing home residents to gather data on their perception concerning relationships with friends and/or family and their interest in using webcams.

In addition, a brief survey of family and/or friends was performed to gather data on their interest in communicating via webcam with family members in nursing homes.

Results

This convenience sample from three area nursing homes consisted of 33 nursing home residents (27 female) and 16 family members. Two of the nursing homes were in rural communities and one in a college town of 20,000 inhabitants. Residents ranged in age from 65-100 years: 24 were 80 or older and 8 were 90 or older. Twenty-seven had lived nearby for at least 10 years, with 18 of them living in the area their entire lives. Three were married and 23 widowed. Seventeen (52%) of nursing home residents were satisfied with their current level of communication with friends and family and 17 (52%) indicated that the social support they received from family and friends was not adequate (*Table 1*). Twenty-seven nursing home residents (82%) stated that they were interested in trying webcams as did 13 (82%) of the friends and family members. Nursing home residents listed telephone (21) as the most common means to communicate with friends and/or family, followed by visits (17), letters (13) and email (2). Friends and family said that phone and visits (19) were how they communicated most often, followed by letters (4) and email (1).

Isolation and depression

The GDS identified 15 and MDS identified 13 residents with mild or severe depression (*Table 2*). The MDS data and the nursing home residents' answers did not match. According to the MDS nearly 80% of residents had daily contact with friends or family. This

Table 2. Depression indicators among 33 nursing home residents; GDS=Geriatric Depression Scale; GDS average=9.7 with Standard deviation=7.0; MDS-Section E2=Mood persistence; MDS-Section I1ee=Depression

Indicator	Instrument	Frequency	
		n	%
GDS 0-9 (normal)	GDS	18	55
GDS 10-19 (mild depression)	GDS	10	30
GDS ≥20 (suggests severe depression)	GDS	5	15
Depressed / sad / anxious (according to staff)	MDS-Section E2	25	83
Diagnosed depression	MDS-Section I1ee	13	41

Table 3. Geriatric Depression Scale (GDS) levels and isolation; Isolation score may run from 4 (likely not feeling isolated) to 12 (likely feeling very isolated); SD=Standard deviation

GDS levels	n	Isolation score	
		Mean	SD
Normal	18	6.8	1.5
Mildly depressed	10	9.0	2.9
Severely depressed	5	10.2	2.7

information was gathered from the resident or family members on admission to the nursing home and is representative of the year preceding admission, thus serving as a baseline. Only 5 of the residents, however, stated that they had daily contact. Eleven residents indicated weekly visits, 7 residents didn't list any visitors and another 2 saw friends or family less than every 6 months. Eight residents said that they received 3 or more visitors at least weekly.

Using data from the MDS, we examined issues related to isolation and all would suggest loneliness and social isolation (*Table 1*) especially when coupled with the high percentage of patients who go a week or more without visitors (58%) and the number of individuals who needed extensive support with activities of daily living (58%) or were totally dependent (15%). Both deficits in activities of daily living and decreased contact with a social network have been shown to impact social loneliness[22].

Isolation score construct

We created an isolation score construct using questions pulled from our instruments that lined up with issues identified in the literature on isolation. Five items showed internal consistency of 0.60 using Chronbach's Alpha, a questionable score according to George and Mallery[23]. We created a single score using the five items. The score ranged from 4-12 (4=least likely isolated, 12=most likely isolated). The mean for the isolation score trended up when compared to depression scores (*Table 3*). The Pearson product-moment correlation coefficient to assess the relationship between the isolation score and GDS scores showed a significant correlation between the two variables (r=0.476, n=33, p=0.005).

Perception of communication

Three questions from the study survey addressed perception of communication:
(i) Are you satisfied with the level of communication that you currently have with friends/family?
(ii) How adequate is the social support that you currently receive from friends/family?
(iii) How would you rate your closeness to each? (a list of possible friends/family provided).

Seventeen (52%) nursing home residents stated that they were satisfied with their current level of communication. This compares to 4 (25%) friends or family members who were satisfied. Sixteen residents (49%) felt that social support from friends and family was adequate or very adequate. (*Table 4*).

Telecommunication interest

Interest among nursing home residents and family members in communicating via webcams was high. Both nursing home residents (82%) and friends and family members (81%) stated that they were interested in using webcams to improve communication. All but one family member had computer and internet access and 13 of 16 were willing to purchase webcams; 7 already owned a webcam. Fifteen family members said that they lived too far away to visit regularly. Twelve of the family members said that they were

Table 4. Cross-tabulation of desiring webcam-communication and characteristics among 32 nursing home residents; No significant relations were found

Characteristic	Value	Want webcam	
		Yes	No
Satisfied with level of communication with friends and/or family	Yes	12	5
	No	14	1
Health or emotional problems interfere with social activities	Yes	5	0
	No	19	5
Geriatric depression scale (GDS)	Normal	14	2
	Mildly depressed	7	3
	Severely depressed	5	0
Support received from family and friends	(Very) adequate	12	4
	Somewhat adequate / Not at all	13	2
Frequency of visitors	At least monthly	17	3
	>Monthly	9	3

not satisfied with the level of communication with their relative in a nursing home. All 12, plus one individual who was satisfied with the level of communication, indicated an interest in using webcams.

The chi-squares were calculated for webcam interest and the variables social support from family, satisfaction with communication, extent health interferes with social interaction, and time health interferes with social interaction. None were found significant. Logistic regression examined isolation and depression as predictors of webcam use. Again, none were found significant.

Discussion

Nursing home residents are more likely to experience loneliness and social isolation compared to their community counterparts[1,2,24]. Our population had several risk factors for poor social support: age (73% were 80 or older), female (82%), widowed, divorced, or never married (91%) and depression (39% mild or severe)[1,4].

Social networks were an important component of this study since a number of studies have tied it to loneliness among the elderly[1,2,22,24]. Loneliness is defined in several ways in the literature, including the absence or perceived absence of satisfying social relationships; the gap between the kinds of relationships one has and what they would like to have[1]; and the time spent alone due to lack of a social network[2]. Social isolation, which is tied to loneliness, is defined by "the time individuals spend alone and is the result of a lack of involvement and integration into a social network"[1]. Several findings suggest that a large percentage of this cohort had decreased social networks and were not involved in facility activities.

Additionally, 73% either needed extensive help with ADLs or were totally dependent, another factor influencing loneliness and the ability to participate in activities both within and outside a long-term care facility. In a meta-analysis of the literature on loneliness in the elderly, quality of social contacts was more closely related to loneliness than quantity of contacts: contact with neighbors showed stronger associations with decreased loneliness, compared to contacts with family members[1]. In fact, "Because friendships are voluntary, their effects on loneliness may be stronger than family relationships, which are structurally determined. Friendships are more likely to be reciprocal than kin relationships"[1]. In this study friends were second only to daughters for closeness. Twenty-five (76%) individuals listed at least one person that they were very close to and 9 residents listed four or more people that they were very close to.

The MDS and resident perception concerning frequency of visits varied sharply. Only 5 (15%) of the residents stated that they had daily contact, 12 weekly (36%), and 12 (36%) stated that they didn't get visitors monthly, yet the MDS indicated that 23 residents received daily visits. The MDS information, however, represents the time frame prior to admission, thus the difference between it and resident statements may highlight a significant decline in visitation. This finding is consistent with research examining level of contact between newly admitted nursing home residents and friends and family. One study found that contact decreased by nearly half following admission. The rate of visits in this study was also consistent with studies that found that 60% of nursing home residents received at least weekly visits[25]. In our study 51% of the residents received at least weekly visits. We did not ask about contact frequency via phone or letters.

Despite the perception by some that elderly are reluctant to use technology, the majority of the nursing home residents in this study expressed an interest in using webcams. Several researchers documented that the older persons are willing to try technology if it's not too complex or costly, and if there are supports in place[26, 27]. Ventkatesh[28] developed a model based on technology acceptance literature and proposed four constructs that played a significant role: performance expectancy, effort expectancy, social influence, and facilitating conditions. These are all considerations that we will need to build into the development, implementation, and monitoring of a program that utilizes webcams to augment communication among nursing home residents and their families.

We believe that the small number of respondents who do not want to participate as well as the small sample size is the cause of our inability to detect a significant relationship between loneliness and interest in video contact. We will enroll a larger number of participants in the next phase of this study.

Conclusion

Nearly 40% of our elderly nursing home patients were either mildly or severely depressed, roughly half were not satisfied with the current level of communication with their family members, and 46% did not believe that the social support from family and friends was adequate.

Issues such as privacy, training and support will need to be addressed before placing telecommunication devices in nursing homes, but this study identified a need among our pilot population for better or more contact with family and/or friends and a willingness on the part of both the residents and their family and friends to try and enhance communication with telecommunication. The next step is to determine if the use of telecommunication helps to reduce nursing home residents' isolation and depression, and thus improves their perceived quality of life.

Acknowledgments

We received funding from Ohio University's Center for Telemedicine Research and Interventions (CENTRI).

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