Usages of Computers and Smartphones to Develop Dementia Care Education Program for Asian American Family Caregivers

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Objectives: Families of ethnic minority persons with dementia often seek help at later stages of the disease. Little is known about the effectiveness of various methods in supporting ethnic minority dementia patients’ caregivers. The objective of the study was to identify smartphone and computer usage among family caregivers of dementia patients (i.e., Korean and Vietnamese Americans) to develop dementia-care education programs for them.

Methods: Participants were asked various questions related to their computer or smartphone usage in conjunction with needs-assessment interviews. Flyers were distributed at two ethnic minority community centers in Southern California. Snowball recruitment was also utilized to reach out to the families of dementia patients dwelling in the community.

Results: Thirty-five family caregivers, including 20 Vietnamese and 15 Korean individuals, participated in this survey. Thirty participants (30 of 35, 85.7\%) were computer users. Among those, 76.7\% (23 of 30) reported daily usage and 53\% (16 of 30) claimed to use social media. A majority of the participants (31 of 35, 88.6\%) reported that they owned smartphones. More than half of smartphone users (18 of 29, 62\%) claimed to use social media applications. Many participants claimed that they could not attend in-class education due to caregiving and/or transportation issues.

Conclusions: Most family caregivers of dementia patients use smartphones more often than computers, and more than half of those caregivers communicate with others through social media apps. A smartphone-app-based caregiver intervention may serve as a more effective approach compared to the conventional in-class method. Multiple modalities for the development of caregiver interventions should be considered.

Keywords: Dementia, Education, Family Caregiver, Smartphones, Minority Groups
dementia, and low health literacy [2]. In fact, many Asian Americans continue to believe that dementia is a normal part of aging [3]. They avoid diagnosis and treatment for dementia until the late stage, and underutilize available public health services [3]. Orange County has a diverse population of older adults, including 66% Caucasian, 14% Hispanic, and 17.5% Asian [4]. In some areas (e.g., Westminster and Garden Grove), the Asian population constitutes 50%–60% of residents [5]. Orange County has the largest numbers of Vietnamese Americans living outside of Vietnam, and more than 30% of Korean Americans live in Southern California. These two ethnic minority groups have the highest rates of poverty (12% in Vietnamese Americans and 17% in Korean Americans) of all ethnic minorities ages 65 and over [5,6]. In Orange County, the Asian population is 62% foreign-born and the fastest growing ethnic population. Tragically, the death rate of Alzheimer’s disease in Orange County increased 36% between 2006 and 2010 [6], which is higher than the California or national rates [7].

Internet- or phone-based interventions have been implemented to support dementia patients’ caregivers [3,8]. However, little is known about the relevance and effectiveness of these interventions for ethnic minority caregivers. Asian Americans are the fastest-growing ethnic group in the United States, yet they remain an understudied group in relation to dementia care. More research is needed to highlight their unmet needs and to inform the development of educational interventions for this population.

The purpose of this study was to identify Vietnamese American and Korean American dementia patients’ family caregivers’ in usages of computers and smartphones as well as their caregiving needs in order to develop a dementia care education program for these groups.

II. Case Description

1. Methods

We conducted a brief survey on computer or smartphone use as part of a larger study to assess the needs of family dementia caregivers from ethnic minority communities, namely, Vietnamese and Korean Americans. Upon approval by the Institutional Review Board of the University of California Irvine (No. 2016-3344), flyers were distributed in two community centers, and a local non-profit Alzheimer’s agency in Southern California. Snowball recruitment was also used to reach out to community-dwelling families impacted by dementia. To be included in this study, participants were required to be (1) informal dementia caregivers (e.g., family members, relatives), and (2) aged 18 years or older, and Korean Americans or Vietnamese Americans. The survey questions developed by the research team included demographic-related questions, and 6 questions related to usages of computers and smartphones, including frequency of use (5-Likert scale, 1 = never, 5 = everyday) and items (e.g., Internet, social media applications) used in computers and smartphones. The English version of the questionnaire was translated into Korean and Vietnamese by bilingual research assistants.

Descriptive statistics (e.g., frequency, percentage, mean, standard deviation) were used to present the demographic information of the participants and their computer and smartphone usage.

2. Results

For a 6-month recruitment period, 20 Vietnamese and 15 Korean dementia caregivers participated in this study. Table 1. Participant demographic information

| Korean American caregivers (n = 15) | Vietnamese American caregivers (n = 20) |
|-----------------------------------|-----------------------------------------|
| Gender (female)                   | Age (yr)                                |
| 13 (86.7)                         | 66.3 ± 13.1                             |
| (86.7)                            | ≤60                                     |
| 4 (26.7)                          | 9 (45.0)                                |
| 6 (33.3)                          | ≥71                                     |
| 6 (40.0)                          |                                          |
| Having a religion (yes)           |                                         |
| 14 (93.3)                         | Mean year of living in the United States |
| (93.3)                            | English proficiency                      |
|                                  |                                         |
|                                  | High school completion or above         |
|                                  | Currently employed                      |

Values are presented as number (%) or mean ± standard deviation or mean (range).

*One participant in each group was excluded because they were born in the United States. English proficiency was measured on a 5-point Likert scale (5 = excellent, 1 = cannot speak English).
Table 2. Usage of computers or smartphones

|                          | Korean American caregivers (n = 15) | Vietnamese American caregivers (n = 20) |
|--------------------------|------------------------------------|----------------------------------------|
| Computer use (yes)       | 13 (86.7)                          | 17 (85.0)                              |
| Internet                 | 12 (80.0)                          | 16 (80.0)                              |
| Email                    | 10 (66.7)                          | 16 (80.0)                              |
| Social media             | 6 (40.0)                           | 10 (50.0)                              |
| How often do you use computer? |                                    |                                        |
| Everyday                 | 9 (60.0)                            | 14 (70.0)                              |
| Weekly                   | 1 (6.7)                             | 2 (10.0)                               |
| Monthly                  | 2 (13.3)                            | 0 (0)                                  |
| Never                    | 3 (20.0)                            | 4 (10.0)                               |
| Smartphone use (yes)     | 14 (93.3)                           | 17 (85.0)                              |
| Call only                | 3 (20.0)                            | 3 (15.0)                               |
| Internet                 | 9 (60.0)                            | 10 (50.0)                              |
| Social media app         | 12 (80.0)                           | 6 (30.0)                               |
| How often do you use smartphone? |                                   |                                        |
| Everyday                 | 13 (86.7)                           | 16 (80.0)                              |
| Weekly                   | 1 (6.7)                             | 1 (5.0)                                |
| Monthly                  | 0 (0)                               | 0 (0)                                  |
| Never                    | 1 (6.7)                             | 3 (15.0)                               |

Values are presented as number (%).

a Multiple responses were applicable.
decreased depression, and enhanced self-efficacy as well as lower costs [12]. The findings were based on computer-based Internet programs [12]. Mobile technologies, including smartphones, tablets, and other wireless devices, serve as platforms of self-management interventions for chronic diseases (e.g., cancer, diabetes) [13,14]. Examples include features for remote symptom monitoring as well as the provision of programmed clinical advice through automated text messaging, web browsing, email, or video [14]. With the widespread use of smartphones among the Asian population, smartphone-based interventions could address the unmet needs of many dementia family caregivers who cannot leave home to take advantage of in-class education because they need to stay at home to care for their loved ones with dementia.

In addition to mobile-based approaches, multi-focal intervention methods (combinations of conventional methods and technology based methods) should be considered to support various dementia caregivers, including spouses, adult children, siblings, relatives, and/or friends/neighbors. Support for families affected by dementia can be found in the general community, such as the work of volunteers who possess a genuine calling to serve vulnerable dementia patients and their families. Partnerships with university students, religious groups, and local ethnic communities would enhance the impact of dementia care education, particularly in efforts to reduce caregiver stress and institutionalization of dementia patients [15].

This study had some limitations. The sample size was small, and data were collected in a specific regional area. However, little research has been conducted on this ethnic minority population of family dementia caregivers. We conducted this study as a preliminary work before we move on to develop culturally appropriate and people-favorable methods for dementia caregiver education and intervention for stress management in this specific population. Our approach can provide an example for other ethnic groups in dementia care research.

The findings from this study showed that most dementia family caregivers in the ethnic minority groups studied use smartphones more often than computers. Over half of those caregivers use social media apps to communicate with others. A smartphone app-based caregiver intervention could serve as a more effective approach in comparison to the conventional in-class method.

In conclusion, as Asian Americans are likely to be digitally adept, mobile-based dementia care education for Asian family caregivers may be an effective complement to traditional educational methods, such as onsite education using paper-based handouts. Multiple modalities in the development of caregiver intervention should be considered.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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