THE GERONTOLOGICAL SOCIETY OF AMERICA®

Original Research Article

What Are the Characteristics of Caregivers Logging in for Support Services?

Kylie Meyer, PhD,[1,*] Zachary D. Gassoumis, PhD,[2] Kathleen Kelly,[3] and Donna Benton, PhD[2]

[1]School of Nursing, University of Texas Health Science Center at San Antonio. [2]University of Southern California Leonard Davis School of Gerontology, Los Angeles, California. [3]Family Caregiver Alliance, San Francisco, California.

*Address correspondence to: Kylie Meyer, PhD, School of Nursing, University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 78229. E-mail: meyerk1@uthscsa.edu

Decision Editor: Laura P. Sands, PhD

Abstract

Background and Objectives: Online service delivery options have the potential to increase access to informational resources among caregivers to older adults. However, it is unknown which caregivers will use online-delivered services over usual service delivery modes (e.g., by phone) when both options are available in social service settings. This is important for service providers to know when making decisions that best serve their communities.

Research Design and Methods: Guided by Andersen's model of health service utilization, we used step-wise logistic regression models to compare the characteristics of caregivers who used an online information service called FCA CareJourney (FCA CJ) with those who accessed the same services using the usual mode of service delivery (*N* = 540). Online and usual-care services were available through two social service organizations in California.

Results: In all, 13.7% of clients used FCA CJ to receive services online. Enabling characteristics were the main predictors of using online-delivered services. Caregivers employed part-time had 3.82 times the odds of using online-delivered services compared to those employed full-time (odds ratio [OR] = 3.82; 95% confidence interval [CI]: 1.58–9.22). Caregivers who learned about services from health care providers had 2.91 times the odds of using FCA CJ as those who learned about services through social services (OR = 2.91; 95% CI: 1.28–6.62). Even among those who learned about services online, 62.2% still accessed services using usual delivery modes.

Discussion and Implications: Based on differences in the characteristics of caregivers using different service delivery modes and the low uptake of online-delivered services, we suggest online service delivery should supplement, not replace, usual delivery modes in social service settings. At the same time, user rates of online service delivery are likely modifiable. Given the potential for online-delivered programming to expand access to information services for caregivers, we recommend further examination into the effects of marketing online service delivery options to caregivers in novel ways.

> **Translational significance:** Relatively few caregivers use online-delivered information and support services compared to in-person delivery of the same information. This suggests that organizations should offer online-delivered services as a supplement, rather than a replacement for usual in-person modes of caregiver information and support. Organizations that provide online caregiver services are advised to interact with their health care and social service partners to increase caregivers' awareness of online options for support services.

Online-delivered caregiver support services are a promising way to expand caregivers' access to high-quality information. Increasing access to high-quality caregiving information is critical given: (1) the growing number of older adults who require assistance because of an illness or disability (Schulz et al., 2016), (2) the increasing complexity of the care that family members are asked to provide (e.g., wound care) (Reinhard, Levine, & Samis, 2012), and (3) the risk to caregivers' and recipients' health and wellbeing when caregivers are under-prepared for this role (Samia, Hepburn, & Nichols, 2012). Semiautomated online service delivery programs may help community-based organizations serve more caregivers by allowing some services to be self-directed (Navaie, 2011). However, little is known about the characteristics of caregivers who are most likely to access support services online over traditional by phone and in-person options.

Preference for Using Online Services by Family Caregivers

As of 2016, 70% of caregivers to people aged 50 years and older were interested in using technology to receive personalized information to assist with their caregiving tasks (AARP, 2016), and the vast majority of caregivers in the United States have access to the internet (86 vs 78% of noncaregivers) (Fox, Duggan, & Purcell, 2013). Caregivers report using technology in a self-directed fashion to seek information related to caregiving, including practical aspects of how to provide care (AARP, 2016; Fox et al., 2013; Kernisan, Sudore, & Knight, 2010), to learn about recipient health conditions (Kernisan et al., 2010; Peterson, Hahn, Lee, Madison, & Atri, 2016), and to find ways to cope with stress from caregiving (AARP, 2016; Fox et al., 2013). Web-based platforms are preferable to smartphone-based apps; 97% of caregivers are comfortable with computers while 80% report being comfortable with tablets and smartphones (AARP, 2016).

Opportunities for More Efficient Service Delivery Using the Web

From a provider perspective, technology can expand services available to caregivers beyond what is possible using traditional modes of delivery (e.g., in-person, phone lines staffed during business hours). Technology may lower the cost of delivering services, so organizations can afford to reach more caregivers with their budgets (Blom, Zarit, Zwaaftink, Cuijpers, & Pot, 2015; Czaja et al., 2006). In addition, online services can encourage new populations of caregivers to use formal support services to access high-quality information. For caregivers who cannot easily access in-person services (e.g., those living in rural areas) and those with fewer opportunities to call during regular service hours (e.g., employed caregivers), technology may enable access to information (Navaie, 2011). Further,

technology-based interventions for caregivers to older adults have demonstrated favorable outcomes (Boots, Vugt, Knippenberg, Kempen, & Verhey, 2014; Hopwood et al., 2018; McKechnie, Barker, & Stott, 2014).

Of particular interest are technologies that provide tailored educational resources and information to family caregivers to older adults. Caregivers to older adults often have difficulty finding the information they need through self-directed searches (Funk, Dansereau, & Novek, 2017; Hopwood et al., 2018). Among caregivers searching an online site developed for caregivers, just 57% indicated they found what they were looking for (Kernisan et al., 2010). Social service organizations can play a role in streamlining and simplifying access to appropriate information by offering web-based platforms with information and resources that are curated for caregivers, and which utilize algorithms that match caregivers' needs and characteristics with recommended information (AARP, 2016; Gaugler, Reese, & Tanler, 2016).

Given new opportunities for organizations to include technology-based services in their repertoires, it is important to understand which caregivers are likely to utilize these services. If new technologies do not reach caregivers with high needs or traditionally underserved populations, organizations may need to weigh how much to invest in these services or at least how to better tailor and market these tools (Fogel, Ribisl, Morgan, Humphreys, & Lyons, 2008; Kovaleva, Blevins, Griffiths, & Hepburn, 2019). Moreover, the caregiving population changes over time, as new caregivers begin this role and others leave (Wolff & Kasper, 2006); successive cohorts of caregivers bring with them distinct attitudes and experiences, and thus caregivers' interest in technological supports is likely to change.

Background and Objectives

Characteristics of Caregivers Using Online-Delivered Services

Survey data provide some information on the characteristics of caregivers who are most likely to use online-delivered services when these are available. Survey research consistently shows younger caregivers are more likely to access information related to caregiving online (Fox et al., 2013; Kim, 2015; Li, 2015). There may be differences in online service access by race and/or ethnicity (Fox et al., 2013), but this is not consistent across surveys (Kim, 2015; Li, 2015). Socioeconomic status, measured by both income and educational attainment, is consistently found to be a predictor of online information-seeking among caregivers (Fox et al., 2013; Kim, 2015; Li, 2015). Although it is conceivable that employed caregivers would be disproportionately interested in using online services given the ability to access information at any time, previous research does not always demonstrate this (Li, 2015). Few studies report on which aspects of caregiving predict the use of online information services (e.g., relationship to the care recipient).

Li (2015), however, observed higher rates of online information-seeking among nonprimary caregivers. Similarly, Kim (2015) found that spending a greater number of hours caregiving per week was associated with reduced likelihood of using the internet to access health information related to caregiving. Both Li (2015) and Kim (2015) found caregivers experiencing higher levels of emotional stress were more likely to use the internet to access information. Self-directed online information-seeking may be used by some more highly-stressed caregivers as a way of coping (e.g., gaining a sense of control over the situation) (Kim, 2015).

There are several limitations to existing research on caregivers' use of online services that undermine the application of previous findings in social service settings. First, it is unclear which caregivers are more likely to use online services to access tailored information when both online and usual service delivery modes are available in social service settings. Second, many available online support programs are targeted at caregivers of people with dementia, rather than the general caregiver population (Beauchamp, Irvine, Seeley, & Johnson, 2005; Gaugler et al., 2016; van der Roest et al., 2010). Thus, conclusions from previous research are not generalizable to those assisting older adults living with other types of conditions. Finally, both available technologies and the population of caregivers are constantly evolving. For service providers seeking to expand the reach of information services by using technology solutions, it is necessary to have current information on which caregivers are likely to use web-based services and which caregivers opt for usual modes of service delivery.

Integrating Web-Based Services Into Existing Service Programs

To understand which caregivers are most likely to use online compared to usual services in social service settings, we sought to determine characteristics of caregivers using a new online caregiver service delivery program called FCA CareJourney (FCA CJ), a program of the Family Caregiver Alliance. FCA CJ delivers tailored information and resources to caregivers based on caregivers' responses to questions in a digital assessment tool. This tool is available to caregivers nationally. An enhanced version of FCA CJ is being used by local organizations serving caregivers in two large California metropolises as an alternative mode of service delivery—one in northern California (Site 1) and one in southern California (Site 2). Both sites are a part of the same statewide network of caregiver support services and have similar funding mechanisms (e.g., state funding). Site 1 serves nearly three times as many caregivers as Site 2, and is housed in an institution that holds a national-level resource center. Site 2 is situated in a university setting. Both organizations have been providing caregiver services for over three decades, and provide analogous services (e.g., counseling, information and referral). The service model used by both sites mirrors the service model found in the

enhanced version of FCA CJ, described in detail below. Clients at both sites have the option to use FCA CJ or usual modes of services delivery (e.g., by phone) to access information with no charge. Advertisement for FCA CJ included a press release, information placed on each service site's home webpage, public educational events for caregivers, a postcard mailed to existing clients, newsletter notifications, and notification by staff to potential clients about the option to receive services online.

Using service assessment data on caregivers receiving services through FCA CJ as well as those accessing services through the usual mode of delivery, we explore the question: What are the characteristics of caregivers choosing to use online-delivered social services compared to those of caregivers accessing services delivered by usual modes?

The Enhanced FCA CJ Program

FCA CJ is a web-based support tool for family caregivers. Caregivers log in to the program with an e-mail address and complete an intake form that requests basic information about themselves (e.g., demographics) and their caregiving situation (e.g., estimated number of hours of caregiving per week). To be eligible for both usual- and online-delivered services, caregivers must provide assistance to someone with multiple chronic conditions and/or a cognitive impairment who is living within the service region.

For decades, service specialists called "family consultants" at each service site have administered caregiver intakes and assessments to eligible clients by phone or in-person. After receiving an assessment administered by a family consultant, caregivers are mailed a packet of information pertaining to their caregiving situation. Depending on the caregiver's assessed needs, mailed packets include items such as support group schedules, fact sheets, and information on educational events. After receiving materials, caregivers can call their designated family consultant at any time if their needs change.

Caregivers have had the option of enrolling in FCA CJ since September 2016 at Site 1 and since April 2017 at Site 2 as an alternative way of accessing services. Clients who access services online through FCA CJ self-administer the intake and assessment, and are shown resources on a digital dashboard based on their responses. Caregivers using FCA CJ can contact family consultants using a secure messaging program within FCA CJ for additional assistance. After assessment, caregivers at both sites receive monthly check-in calls and are reassessed 4 months later. The service model is used at both sites for online and usual services.

Conceptual Model

Study methods and hypotheses were informed by Andersen's model of health care utilization (Andersen, 1995). The Andersen model both predicts and explains the use of health services by individuals, and accounts for both

individual- and contextual-level factors that affect health service use. The model has been applied to assess how equitable access to health care is in a population, and to identify potentially modifiable factors that affect rates of service use (Babitsch, Gohl, & von Lengerke, 2011). According to this model, health service use is predicted by predisposing, enabling, and need-based factors (Andersen, 1995).

We considered predisposing characteristics to using online-delivered services to be primarily demographic, following previous applications of the Andersen model (Wu, Luo, Flint, & Qin, 2015). Based on existing literature (AARP, 2016; Fox et al., 2013), we hypothesized younger people would be more likely to use online-delivered services. Further, we assessed whether use of online services would vary by race/ethnicity given the so-called digital divide posited to discourage online service use among some racial/ethnic minority caregivers (Fogel et al., 2008).

Enabling characteristics include those factors that support the use of online services. As markers of socioeconomic status, educational attainment and employment status imply access to technologies needed to use FCA CJ (e.g., computer and internet), as well as comfort and skill with using online technologies. We further thought that employed caregivers would be more likely to use online services because of restricted opportunities to access services by phone during traditional business/service hours, since phone assessments take at least a half an hour to complete and may be difficult to schedule. Aspects specific to each study site were also believed to affect access, such as persistence among service specialists in promoting FCA CJ and frequency of educational events to promote online service delivery at each site. We further predicted that how caregivers learned about the services would be relevant to whether caregivers used online-delivered services versus services delivered by phone or in-person. For example, we suspected that caregivers who learned about services online would be more likely to use online-delivered services.

Need-based factors pertain to those characteristics that necessitate a caregiver use online- or usual-delivered services. We had conflicting hypotheses regarding how caregiving intensity would affect service delivery preference. On the one hand, those with more intensive caregiver duties, such as caring for someone with a cognitive impairment or greater functional disabilities, might prefer online-delivered services given the opportunity to stop and start assessments when responding to care demands. Further, people with dementia may have different types of information needs than those attending to someone with a functional impairment alone (e.g., managing behavioral symptoms). The information needs of these caregivers may affect their preferences regarding how to receive information services. We also posited that some highly-stressed caregivers might be more likely engage in self-directed online information-seeking in order to cope with their situation (Kim, 2015). On the other hand, those who are more highly stressed may desire the therapeutic aspect of talking to a service specialist

by phone. We include both objective (e.g., hours of caregiving) and subjective (e.g., burden) stressors in our models to discern differences. The model we propose is illustrated in Figure 1.

Research Design and Methods

Data

Data are recorded in the FCA CJ system by users who log in and complete a service assessment themselves, and by service providers who enter information provided by clients over the phone. (Assessments can be administered by family consultants in-person, but this is far less common than phone administration.) For this study, deidentified client data was accessed using a password-protected data extraction form. The initial sample included client data from both sites collected from FCA CJ's launch through June 2018 ($N = 797$). From this sample, inclusion criteria were applied: individuals who were caring for someone with multiple chronic conditions or someone with a cognitive impairment ($n = 690$). Exclusion criteria were: data entered during the first 4 months of program implementation at Site 1 and the first 2 months of implementation at Site 2 in order to minimize the impact of factors pertaining to implementation (e.g., programming errors, training among service specialists) ($n = 62$); caregivers to recipients under age 60 ($n = 31$); and caregivers whose primary language is not English, as FCA CJ is not currently translated into other languages ($n = 57$). After the application of inclusion and exclusion criteria, the analytic sample was 540.

Measures

Dependent variable

The dependent variable indicated whether clients ever logged into the online-delivery platform. If the caregiver registered for the online system using their e-mail address, they were considered an "online service user." Online-users maintained this status even if they reverted to the usual service delivery mode during the assessment process. Otherwise, clients were considered usual service users. This information is collected automatically in the FCA CJ system.

Independent variables

Independent variables were those items asked on either the intake or assessment forms, and were selected based on the Andersen (1995) model.

Predisposing variables

Predisposing variables included age, gender, race/ethnicity, and marital status. Caregiver age was calculated by subtracting each caregiver's reported year of birth from the calendar year when the caregiver approached services. Gender was coded as male or female. Race and ethnicity
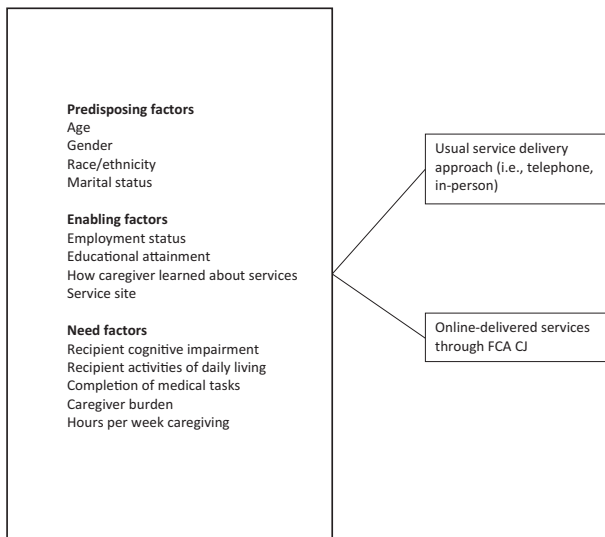
Predisposing factors
Age
Gender
Race/ethnicity
Marital status

Enabling factors
Employment status
Educational attainment
How caregiver learned about services
Service site

Need factors
Recipient cognitive impairment
Recipient activities of daily living
Completion of medical tasks
Caregiver burden
Hours per week caregiving

Usual service delivery approach (i.e., telephone, in-person)

Online-delivered services through FCA CJ

Figure 1. Application of Andersen Model of Health care Utilization to online versus usual service use by caregivers.

were collected as a combined category, which allowed Caucasian/White, African American/Black, Asian, Latino/Hispanic, Native American, Pacific Islander, and Other. Pacific Islander ($n = 5$) responses were collapsed with the Other option to avoid low expected cell frequencies in bivariate analyses (i.e., $n < 5$). Marital status was coded as "married" (married, domestic partners) and "unmarried" (single, divorced, separated, widowed).

Enabling variables
Enabling variables were divided into two subtypes, which we term "individual-level" and "system-level" factors, resonant with Andersen's personal- and community-type enabling factors (Andersen, 1995). Individual-level enabling characteristics included employment status and educational attainment. In the assessment, employment status options included full-time, part-time, leave, retired, and unemployed. We recoded those indicating they were on leave as missing because (1) low cell frequencies preclude reliable results and (2) caregivers on leave are more akin to unemployed than employed caregivers in their time resources, but may have access to more financial resources than unemployed caregivers. Caregivers were asked to select their highest level of educational attainment, and chose among the options: some high school, high school degree, some college, college degree, and postgraduate degree. System-level enabling factors included both the service site (either Site 1 or Site 2) and how the caregiver learned about services (through a health care provider, social service provider, online, or another source (e.g., family and friends, public event).

Need variables
Need-based factors included whether the recipient had a cognitive impairment, the recipient's functional ability,

completion of medical tasks by the caregiver, caregiver burden, and estimated hours of caregiving per week. Recipients were coded as having a cognitive impairment if the caregiver indicated the recipient experienced memory problems or had any of the following conditions: Alzheimer's disease, vascular dementia, Lewy Body dementia, frontotemporal dementia, or dementia (nonspecified). Conditions did not have to be diagnosed, but the majority of caregivers indicated a formal diagnosis (56.3%). Caregivers were asked about whether they provided assistance with any activities of daily living (ADLs), including eating, bathing, dressing, grooming, toileting, and transferring (Katz, 1983). These were added such that scores for needing any assistance with ADLs ranged from 0 to 6. Caregivers were asked whether or not they completed medical tasks when assisting the recipient, and were given examples such as wound care, administering medications, and preparing special diets. Burden was measured using the four-item version of the Zarit Burden screener instrument (Bédard et al., 2001). Caregivers with a score of 8 or more were considered "burdened." The estimated number of hours during which caregivers provided assistance in a given week was asked in 10 hr increments: none, 1–10 hr, 11–20 hr, 21–30 hr, 31–40 hr, 41 and over, cannot leave care recipient alone. We recoded these as providing <20, 20–40, or >40 hr of care per week to ensure robust cell sizes.

Analysis

Analyses began with descriptive statistics, stratified by users of FCA CJ and the usual service delivery mode. To explore differences in characteristics between caregivers using FCA CJ over usual services, we applied bivariate statistics including Pearson chi-square tests and *t* tests. Before proceeding to regression models, we assessed contingency tables to ensure there were no cells with expected frequencies of fewer than 5 to prevent biased estimates. Next, we applied step-wise logistic regression models with use of online service delivery as the outcome. Results are reported in odds ratios, which can be interpreted as the ratio of the probability that caregivers with a particular characteristic (e.g., female gender) will use online-delivered services over the probability they will use online-delivered services if they did not have this characteristic. Odds ratios that are higher than 1 indicate a positive association between a given characteristic and using online services, while an odds ratio lower than 1 indicates a negative association.

Model 1 regressed predisposing factors on FCA CJ use. Models 2 and 3 added enabling factors to Model 1, where Model 2 included only individual-level enabling factors (i.e., employment, educational attainment) and Model 3 added system-level enabling factors (i.e., how caregiver learned about services, service site). Model 4 included predisposing, enabling, and need-based factors. While building regression models, we assessed goodness of fit. Variables with a bivariate outcome where

the *p*-value was greater than .25 were removed from the model one at a time. We compared the coefficients for other variables between nested models (i.e., models with and without the nonassociated variable). If the coefficients of remaining variables differed more than 20% between models, the variable was retained for the final model (Hosmer, Lemeshow, & Sturdivant, 2013). We also examined continuous variables age and ADL functional ability for linearity on a logit distribution. Due to a notable violation of linearity assumptions, we recoded age into a categorical variable, trifurcated into three nearly equally-distributed categories (i.e., less than 50, 50–65, and over 65). We also assessed predictor variables for missing data. The highest proportion of missing data was found for: how clients learned about services (25.6%), educational attainment (22.2%), and burden (14.6%). Bivariate associations indicated that data was not missing completely at random. To prevent biased estimates in the regression, missing data was handled using multiple imputation by chained equations. The imputation model included auxiliary variables associated with missing information, including caregivers' self-assessed health, poverty, social isolation, and month when the assessment was administered. Based on the highest fraction of missing information found in our models, we used 40 imputed datasets. Using a conservative guide for analytic sample size, we confirmed our largest model was adequately powered for the number of predictors included (VanVoorhis & Morgan, 2007). To assess model fit, we applied a Hosmer-Lemeshow statistic to the last 10 imputed data sets for each model. The statistic was nonsignificant for each model, suggesting adequate fit across models.

This study was approved as exempt by the University of Southern California's University Park Campus Institutional Review Board in November 2016 (UPC-16-00544). All analyses were completed in Stata 15.1.

Results

Sample Characteristics

The analytic sample encompassed 540 caregivers who completed an assessment from January 2017 (June 2017 at Site 2) through June 2018. On average, caregivers were 61.3 years old (*SD* = 13.2) ranging in age from 23 to 94 years. Care recipients were an average of 80.7 years old (*SD* 9.3). Just over half of clients assisted a parent (54.4%), while 36.6% of clients assisted a spouse or partner. Clients approached services from all walks of caregiving; 41.5% had been a caregiver for less than 2 years, 30.6% had been caring for 2–5 years, and 27.9% had been providing care for more than 5 years. Seventy-five percent of the caregivers assisted someone with a cognitive impairment. On average, recipients had 3.7 ADL impairments (*SD* = 2.2). Just

23.0% of clients indicated an interest in learning about technologies to help assist with caregiving.

Bivariate Associations

During the study period, 74 (13.7%) of the caregivers registered with the online FCA CJ system. Several bivariate relationships emerged when comparing caregivers who accessed online-delivered versus usual services. We describe these differences according to the proposed application of the Andersen model.

Predisposing characteristics

We did not find any statistically significant relationships between predisposing demographic variables and use of online-delivered services, but did observe two results near the significance threshold (i.e., $p < .05$). On average, online service users were younger than those using regular services ($\chi^2 = 5.46$; $p = .07$). FCA CJ users were more likely to be under age 50 (27.9 vs 17.0% among usual services) and less likely to be older than 65 (31.2 vs 43.6% among usual services). The proportion of women caregivers was approximately 10% higher among those using FCA CJ ($\chi^2 = 3.43$; $p = .06$). Bivariate associations were not found for race/ethnicity or marital status.

Enabling characteristics

We discovered significant bivariate associations among each enabling characteristic we examined. Regarding individual-level factors, over twice as many part-time employees used the online service delivery option as usual-delivered services (26.4 vs 12.5%; $\chi^2 = 10.17$; $p = .02$). Caregivers using FCA CJ had higher levels of educational attainment. Whereas 10.3% of those with a postgraduate degree used usual service delivery, 32.3% of FCA CJ users had a postgraduate degree ($\chi^2 = 27.17$; $p < .001$). System-level enabling factors also showed significant associations. One-fifth of those who learned about services through social service providers used online-delivered services (20.0%), while about one-third of those who learned of services by health care providers did so (31.7%; $\chi^2 = 42.80$; $p < .001$). Those who received service at Site 2 were far more likely to use online-delivered services than clients at Site 1 (28.2% compared to 8.2%; $\chi^2 = 36.51$, $p < .001$).

Need characteristics

No need-based characteristics were associated with online versus usual service use in bivariate analyses. We did, however, observe results near the significance threshold for caregivers who completed of medical tasks. Approximately 12% fewer caregivers using online services reported completing medical tasks as those using the usual service delivery mode ($\chi^2 = 2.99$; $p = .08$). In addition, whereas nearly one-third (31.3%) of FCA CJ users provided care for less than 20 hr per week, the proportion of caregivers providing

less than 20 hr a week of care was just one-fifth (20.1%) among those using usual service delivery (χ^2 = 4.21; *p* = .12). See Table 1 for additional descriptive and bivariate information.

Logistic Regression Results

The first model we ran (Model 1) included only predisposing variables. The only statistically significant predictor was the age of the caregiver: those aged 65 years and older had 0.40 times the odds of using online-delivered services compared to those under age 50 (odds ratio [OR] = 0.40; 95% confidence interval [CI]: 0.19–0.84). When individual-level enabling factors were added, age was no longer a significant predictor of using online-delivered services. In this model, caregivers employed part-time had 3.13 times the odds of using online-delivered services compared to caregivers employed full-time (OR = 3.13; 95% CI: 1.44–6.81). Compared to caregivers who completed some high school, those who had a graduate degree had 11.79 times the odds of using FCA CJ, though the confidence interval was notably wide (OR = 11.79; 95% CI: 2.71–51.24). System-level enabling factors were also strong predictors of online service delivery in Model 3. Caregivers who learned about services through health care providers had 2.91 times the odds of accessing services online than those who learned about services through social service providers (OR = 2.91; 95% CI: 1.30–6.55). Those who learned about services online had 5.17 times the odds of using FCA CJ versus those who learned about services from social service providers (OR = 5.17; 95% CI: 2.10–12.74). Those who received services at Site 1 had 0.31 times the odds of using FCA CJ (OR = 0.31; 95% CI: 0.17–0.58). None of the need-based factors added in Model 4 were significant predictors of using online-delivered services (see Table 2).

Discussion and Implications

This study compared the characteristics of caregivers using an online mode of service delivery with those receiving information services with the usual service delivery mode at two social service sites. The services received were the same using each mode of service delivery, and both modes were available to eligible caregivers without charge. Enabling factors were most strongly related to using online-delivered over usual services, including educational attainment, employment status, how clients learned about services, and the service site. Rates of caregivers using the online service delivery option were surprisingly low.

Predisposing and need-based characteristics appeared to have little impact on whether caregivers accessed services online. Notably, our regression findings differ from previous survey studies, which found that younger caregivers were more likely to access online services than older caregivers (AARP, 2016; Kim, 2015; Li, 2015), although we did observe a bivariate relationship between age and using online-delivered services. We suspect the difference between our findings and those of earlier studies is partially a result of the older age of our study sample compared to survey research samples. Consistent with previous evaluations of caregivers using social support services, the caregivers in our sample were older than caregivers from national survey studies (Herrera, George, Angel, Markides, & Torres-Gil, 2013). Whereas one-quarter of caregivers are Millennials (Flinn, 2018), just 5.6% of caregivers the study sample were under age 40 (*n* = 28). There may be sociocultural factors which undermine the use of social services among younger caregivers (e.g., help-seeking tendencies). Previous applications of the Andersen model have detected variation in health service use by age according to the service type (Babitsch et al., 2011). Both print and online advertisements targeted at younger people (e.g., stock photos featuring younger caregivers in brochures and on social media posts) may facilitate greater use of social services by younger caregivers in the future. In addition, we did not find support for the hypothesis that online-delivered service use varied by racial/ethnic minority status (Fox et al., 2013). Lack of difference by race/ethnicity has been previously observed (Kim, 2015; Li, 2015).

It is more challenging to draw comparisons between our results and previous studies when considering need-based factors, since these are less consistently reported. One item on which our findings deviated from previous research was the relationship between online information-seeking and emotional strain (Kim, 2015; Li 2015). We did not find that emotionally-distressed (i.e., burdened) caregivers were any more likely to access services online. However, previous studies have found caregivers demonstrating less enthusiasm for using online resources to access emotional support. Whereas 70% of caregivers in the AARP survey of caregivers to people aged 50 years and older indicated they would likely use online sources to receive personalized information, just 52% of respondents expressed interest in learning how to access emotional support from an online source (AARP, 2016). Whether emotionally-distressed caregivers use online services may be affected by the type of information caregivers expect they will receive online compared to when they talk to a family consultant. Previous studies where a positive association was found between online information-seeking and emotional strain were focused on health information (Kim, 2015; Li 2015), whereas FCA CJ also includes information about caregivers' wellbeing. More emotionally-distressed caregivers may prefer information about the care recipient's health condition and care needs, rather than emotional support-type information for themselves. On the other hand, more distressed caregivers may benefit from communicating with a family consultant to learn about additional types of information (e.g., stress management). To best address emotionally-distressed caregivers' information needs and preferences, providers might consider developing and

Table 1. Comparing Client Characteristics at Each Service Site (*N* = 540)

	Variable	Usual services N (%) (n = 466)	CareJourney N (%) (n = 74)	Missing N (%)	χ^2/t test	p value
Predisposing	Age			44 (8.2)	5.46	.07
	Less than 50	72 (17.0)	17 (27.9)			
	50–65	167 (39.4)	25 (41.0)			
	Older than 65	185 (43.6)	19 (31.2)			
	Female	340 (73.43)	61 (83.6)	4 (0.7)	3.43	.06
	Race/ethnicity			0 (0.0)	2.39	.49
	Caucasian	194 (41.6)	32 (43.2)			
	African American	92 (19.7)	19 (25.7)			
	Asian	90 (19.3)	10 (13.5)			
	Latino	90 (19.3)	13 (17.6)			
	Married	302 (65.4)	40 (56.3)	7 (1.3)	2.18	.14
Enabling	Employment			27 (5.0)	10.17	.02
	Full time	132 (29.9)	19 (26.4)			
	Part time	55 (12.5)	19 (26.4)			
	Retired	179 (40.6)	22 (30.6)			
	Unemployed	75 (17.0)	12 (16.67)			
	Education			120 (22.2)	27.17	<.001
	Some high school	56 (15.6)	2 (3.2)			
	Completed high school	42 (11.7)	3 (4.8)			
	Some college	77 (21.5)	14 (22.6)			
	College	146 (40.8)	23 (37.1)			
	Postgraduate	37 (10.3)	20 (32.3)			
	How client learned about service			138 (25.6)	42.80	<.001
	Health care provider	67 (19.6)	19 (31.7)			
	Social service provider	213 (62.3)	12 (20.0)			
	Online	28 (8.2)	17 (28.3)			
	Other	34 (9.9)	12 (20.0)			
Need	Service site 1	359 (77.0)	32 (43.2)	0 (0.0)	36.51	<.001
	Care recipient has a cognitive impairment	340 (74.2)	59 (79.7)	8 (1.5)	1.03	.31
	Number of ADL tasks[a]	3.7 (2.2)	3.6 (2.3)	14 (2.6)	0.28	.78
	Completes medical tasks	149 (34.3)	13 (22.8)	48 (8.9)	2.99	.08
	Burden	262 (65.2)	38 (64.4)	79 (14.6)	0.01	.91
	Hours caregiving/week			44 (8.2)	4.21	.12
	Less than 20	87 (20.1)	20 (31.3)			
	20–40	92 (21.3)	13 (20.3)			
	Greater than 40	253 (58.6)	31 (48.4)			

Note: ADL = Activities of daily living.
[a]Descriptive statistics presented for ADLs are *M* (*SD*).

Table 2. Characteristics of Caregivers Using Online- and Usual-delivered Service Modes (*N* = 540)

	Variable	Model 1 OR	Model 1 CI	Model 2 OR	Model 2 CI	Model 3 OR	Model 3 CI	Model 4 OR	Model 4 CI
Predisposing	Age								
	Less than 50	Reference							
	50–64	0.61	0.31–1.21	0.67	0.31–1.42	0.59	0.26–1.34	0.61	0.26–1.43
	Older than 65	0.40	0.19–0.84	0.41	0.15–1.14	0.34	0.11–1.01	0.34	0.11–1.08
	Female	1.78	0.92–3.44	1.51	0.76–3.01	1.50	0.72–3.13	1.47	0.70–3.09
	Race/ethnicity								
	Caucasian	Reference							
	African American	1.13	0.59–2.15	1.39	0.69–2.78	0.99	0.45–2.17	0.98	0.44–2.19
	Asian	0.58	0.27–1.27	0.66	0.29–1.47	0.56	0.23–1.35	0.64	0.26–1.57
	Latino	0.69	0.33–1.42	0.89	0.41–1.90	0.63	0.27–1.47	0.66	0.28–1.57
	Married	0.87	0.50–1.51	0.84	0.47–1.53	0.95	0.50–1.81	0.95	0.49–1.82
Enabling	Employment								
	Full time	Reference							
	Part time			3.13	1.44–6.81	3.51	1.48–8.29	3.82	1.58–9.22
	Retired			1.60	0.64–4.05	1.67	0.61–4.60	1.88	0.65–5.39
	Unemployed			1.34	0.59–3.05	1.13	0.46–2.79	1.19	0.46–3.09
	Education								
	Some high school	Reference							
	Completed high school			1.64	0.27–9.79	1.21	0.17–8.45	1.26	0.17–9.18
	Some college			3.74	0.85–16.52	2.57	0.55–12.15	2.70	0.55–13.30
	College			3.69	0.88–15.50	2.39	0.53–10.82	2.50	0.51–12.29
	Postgraduate			11.79	2.71–51.24	6.88	1.45–32.58	7.14	1.42–36.04
	How did client learn about service								
	Social service provider	Reference							
	Health care provider					2.91	1.30–6.55	2.91	1.28–6.62
	Online					5.17	2.10–12.74	5.42	2.15–13.66
	Other					3.65	1.45–9.20	3.53	1.38–9.04
	Service site 1					0.31	0.17–0.57	0.31	0.17–0.58
Need	Cognitive impairment							1.49	0.72–3.08
	Number of ADL tasks							1.03	0.89–1.19
	Completes medical tasks							0.78	0.35–1.75
	Burden							0.94	0.49–1.81
	Hours caregiving/week								
	Less than 20	Reference							
	20–40							0.65	0.26–1.63
	Greater than 40							0.83	0.37–1.88
Constant		0.21	0.09–0.51	0.04	0.01–0.19	0.06	0.01–0.43	0.05	0.01–0.42

Note: CI = Confidence interval; OR = Odds ratio.

smarketing online services to include information about the care recipient's health condition, and following up with a personal contact to remind caregivers about other types of informational supports (e.g., stress management tools, counseling options). Null findings regarding recipient cognitive impairment and functional ability were consistent with survey results (Kim, 2015; Li, 2015). Bivariate results did suggest an association between selection of usual service delivery and the completion of medical tasks, but this was not found in regression results. Overall, we found that objective caregiving stressors are largely unassociated with use of online-delivered services, but whether caregivers go online to seek information may be affected by caregivers' subjective levels of distress.

Enabling factors were most clearly associated with whether caregivers used online or in-person services. Enabling factors are often more modifiable than predisposing and need-based characteristics (Andersen, 1995). Targeting enabling factors rather than predisposing or need-based factors is likely the most efficient way for provider organizations to increase the use of online-delivered caregiver support services, if this is desired.

Both types of enabling factors—individual- and system-level—were associated with caregivers' use of the online service delivery option. While we expected primary and full-time employed caregivers to prefer online over usual service delivery because of the added convenience of being able to access services at any time, we found that part-time employees were more likely than full-time employees to use FCA CJ. Part-time employees may have more time available to complete internet searches and find out about online resources compared to those employed full-time. This is consistent with previous research wherein nonprimary caregivers were more likely to use online resources than primary caregivers (Kim, 2015; Li, 2015). It takes time to filter through online search results before identifying a trustworthy resource (Funk et al., 2017), and primary caregivers may not have sufficient time to do this filtering. Advertising online services so that caregivers spend less time reviewing search results (e.g., promoting services through advertisements on other websites, careful selection of search engine tags) may support access to online services among full-time employed caregivers. Raising awareness of online services among human resources staff to share with employees or marketing online programs as employee assistance programs (see Schulz et al., 2016) are also plausible avenues to increase uptake of online-delivered services among full-time employed caregivers. On the other hand, the number of hours of care provided per week did not predict online service use in regression models. We suspect this is because reported time estimates reflect many different caregiving experiences that differentially affect caregivers' ability to sort through online information options (e.g., companionship versus constant monitoring). Findings that higher educational attainment predicted use of online-delivered services are consistent with previous surveys (Kim, 2015;

Li, 2015). Still, wide confidence intervals for clients with a postgraduate degree indicate uncertainty in the extent to which more educated caregivers select online service options, a possible consequence of low cell frequencies. Lower use of online services among those with less education may also indicate challenges accessing equipment such as a computer and internet, and lower levels of comfort navigating online resources. Promoting equitable access to online services by marketing and demonstrating services in public libraries or senior centers with computer labs could overcome some of these access obstacles. Further, because Site 2 was located at a university, perceptions of services in this setting may have contributed to different rates of service use by education level.

System-level enabling factors had the strongest associations with the use of online-delivered services, suggesting that approaches to marketing digital services are uniquely relevant to their uptake. Nearly one-third of caregivers at Site 2 used the online service delivery mode, where 8.2% of caregivers at Site 1 did so. While we do not know what about each service site generated such different rates FCA CJ utilization, variation in the promotion of online services by the two organizations (e.g., use of social media) and service specialists at each site (i.e., description of services to potential clients) are possible causes of this difference. Variation in the types of partner organizations and referring agencies at both sites likely also played a role. Caregivers who learned about services through social service providers were less likely to use the online-delivery option compared to those who learned about services through a health care provider or online. At Site 1, nearly twice as many clients learned about services through a social service provider compared to Site 2 (54.9 vs 26.4%). Increasing partnerships with health care organizations and becoming a part of their referral networks could promote higher use of online-delivered caregiver information services (e.g., inclusion of promotional material in hospital discharge planning packets). Raising awareness about new service delivery modes among existing social service partners may also help to grow the numbers of caregivers using online services (e.g., lunch demonstrations of online service options, targeted e-mail campaigns).

Overall, we were surprised by the low uptake of online-delivered services in a social service setting. Just 23.0% of clients expressed an interest in using technology to access services, and only 13.7% actually used the online-delivered service. This is far below rates indicated in national survey data (AARP, 2016; Kim et al., 2015; Li, 2015). Even among those who learned about services online, 62.2% still opted to use services delivered by phone or in-person. While low rates of online service utilization might be attributed to implementation factors, this is unlikely. We removed the first months' data from both sites, and did not observe a discernable pattern in online service use over time. Adding a control variable for month of data collection did not appreciably alter findings. Nor is this finding likely to be a reflection of

caregivers' opinion of the FCA CJ system itself, since the dependent variable denotes which caregivers registered for online-delivered services. When caregivers registered, they would not have experience using FCA CJ. Granted, strong positive or negative opinions about FCA CJ shared among caregivers in a community could influence word-of-mouth processes. However, approximately equal proportions of caregivers indicated they learned about services through family and friends among those who accessed services they usual way compared to online, making this interpretation less probable (16.7 vs 17.6% among usual service users). Again, the focus on health information in some previous studies (Fox et al., 2013; Kim, 2015) likely underlies some of the discrepancy we observe between results from this study and previous ones. However, we believe the primary reasons uptake of online service delivery was so low is due to (1) differences between caregivers who use social services and caregivers from nationally-representative survey samples (e.g., the older age of clients using social support services), and (2) lack of awareness among caregivers and partner organizations regarding the availability of online services when they are implemented into existing service structures. We do not conclude that low uptake of online services means that caregivers are uninterested in online-delivery options. Indeed, strong associations between online and enabling characteristics under Andersen's (1995) model suggests that uptake of online service delivery can be modified by social service providers with careful and strategic marketing (see Implications.)

Limitations

There are several limitations with this study. First, clients received services from service agencies based in large urban regions, and thus findings may not be generalizable to rural populations where there is particular interest in expanding digital services (Navaie, 2011). As the FCA CJ program expands to more rural service settings, client characteristics should be re-evaluated. Second, low rates of use of online-delivered services resulted in low cell sizes, and may have hidden weaker associations in regression models. In order to build statistical models where we could include all key covariates and avoid a small sample bias, we waited for enough data to accumulate so there were a substantial number of FCA CJ users on whom we could run analyses. Again, re-evaluating client characteristics will be important as (1) the number of users increases and (2) the FCA CJ program is scaled to other sites. Third, despite advertising at both sites, we do not know the extent to which caregivers made an explicit choice between FCA CJ and usual services; thus, we cannot know whether usual services were pursued by caregivers because of an actual preference for usual services or simply due to a lack of awareness of the FCA CJ option. We advise future researchers, providers, programmers involved in evaluating use of online services for caregivers to add more nuanced measures of how caregivers accessed services. An item that captures whether caregivers started services online and switched to usual services, for example, would provide additional understanding about who is accessing online versus usual services and their process for doing so. Items that capture the extent of online service utilization (e.g., whether the client returned to the site) would also be useful to know for future research on caregivers' use of online informational support services. Finally, we do not know exactly which factors led to variation in rates of caregivers using the online service delivery option at each service site. This may indicate variation in marketing approaches being used at each site, and different "scripts" being used by family consultants at each site during the in the intake process. Qualitative research to discern these factors is underway (i.e., in-depth interviews with family consultants and caregivers).

Implications

Answers to the question of which caregivers use online services to access information have considerable implications for the way caregiver services are delivered. Results showed that there is an interest in using online-delivered services to access caregiving information by at least some family caregivers. Lower rates of online service delivery among less-educated caregivers support the need to maintain social services delivered by usual means for some caregivers, as does the selection of usual-delivered services among a considerable proportion of clients who found out about services online. Variation in system-level enabling factors suggest that utilization of online services is likely modifiable. Service organizations have an opportunity to increase use of online service delivery options among clients, through means such as marketing to caregivers at health service providers, increasing awareness of online programs within social services networks, and making online options easier to find for time-stretched caregivers. Novel marketing of online service delivery options, such as by partnering with employers, could also alter rates of online use by attracting caregivers who traditionally have been less likely to approach social services (e.g., younger caregivers).

Conclusion

We compared the characteristics of caregivers using online and in-person delivery modes for the same support services. Overall, we observed few predisposing and need-based differences between caregivers using the online FCA CJ system versus usual service delivery at two service sites. Those differences we did observe suggest the relevance of potentially modifiable enabling factors—how caregivers learn about services and aspects related to the service site—in whether caregivers use online-delivered services. For service organizations and caregivers, online service delivery options can be an appealing supplement to usual services. Future research should focus on learning why caregivers opt to

use online versus usual service delivery options when both are available using qualitative data and the effectiveness of strategies to modify rates of online service delivery uptake through different marketing approaches.

Funding

Conflict of Interest

None reported.

References

AARP. (2016). Caregivers & technology: What they want and need. Retrieved from: http://www.aarp.org/content/dam/aarp/home-and-family/personal-technology/2016/04/Caregivers-and-Technology-AARP.pdf

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior,* **36**, 1–10. doi:10.2307/2137284

Babitsch, B., Gohl, D., & von Lengerke, T. (2011). Re-revisiting Andersen's behavioral model of health services use: A systematic review of studies from 1998–2011. *GMS Psycho-Social-Medicine*, **9**. doi:10.3205/psm000089

Beauchamp, N., Irvine, A. B., Seeley, J., & Johnson, B. (2005). Worksite-based internet multimedia program for family caregivers of persons with dementia. *The Gerontologist,* **45**, 793–801. doi:10.1093/geront/45.6.793

Bédard, M., Molloy, D. W., Squire, L., Dubois, S., Lever, J. A., & O'Donnell, M. (2001). The zarit burden interview: A new short version and screening version. *The Gerontologist,* **41**, 652–657. doi:10.1093/geront/41.5.652

Blom, M. M., Zarit, S. H., Groot Zwaaftink, R. B., Cuijpers, P., & Pot, A. M. (2015). Effectiveness of an internet intervention for family caregivers of people with dementia: Results of a randomized controlled trial. *Plos One,* **10**, e0116622. doi:10.1371/journal.pone.0116622

Boots, L. M. M., Vugt, M. E., Knippenberg, R. J. M., Kempen, G. I. J. M., & Verhey, F. R. J. (2014). A systematic review of internet-based supportive interventions for caregivers of patients with dementia. *International Journal of Geriatric Psychiatry*, **29**, 331–344. doi:10.1002/gps.4016

Czaja, S. J., Schulz, R., Belle, S. H., Burgio, L. D., Armstrong, N., Gitlin, L. N.,…Stahl, S. M. (2006). Data and safety monitoring in social behavioral intervention trials: The REACH II experience. *Clinical Trials (London, England),* **3**, 107–118. doi:10.1191/1740774506cn136oa

Flinn, B. (2018). Millennials: The emerging generation of family caregivers. *Innovation in Aging*, **2**, 240. doi:10.1093/geroni/igy023.896

Fogel, J., Ribisl, K. M., Morgan, P. D., Humphreys, K., & Lyons, E. J. (2008). Underrepresentation of African Americans in online cancer support groups. *Journal of the National Medical Association,* **100**, 705–712. doi:10.1016/S0027-9684

Fox, S., Duggan, M. & Purcell, K. (2013). *Family caregivers are wired for health*. Pew Research Center's Internet & American Life Project. Retrieved from: http://www.pewinternet.org/2013/06/20/family-caregivers-are-wired-for-health/

Funk, L. M., Dnasereau, L. & Novek, S. (2017). Carers as system navigators: Exploring sources, processes and outcomes of structural burden. *The Gerontologist*. Advance online publication. doi:10.1093/geront/gnx175

Gaugler, J. E., Reese, M., & Tanler, R. (2016). Care to plan: An online tool that offers tailored support to dementia caregivers. *The Gerontologist,* **56**, 1161–1174. doi:10.1093/geront/gnv150

Herrera, A. P., George, R., Angel, J. L., Markides, K., & Torres-Gil, F. (2013). Variation in older Americans act caregiver service use, unmet hours of care, and independence among Hispanics, African Americans, and whites. *Home Health Care Services Quarterly,* **32**, 35–56. doi:10.1080/01621424.2012.755143

Hopwood, J., Walker, N., McDonagh, L., Rait, G., Walters, K., Iliffe, S.,…Davies, N. (2018). Internet-based interventions aimed at supporting family caregivers of people with dementia: Systematic review. *Journal of Medical Internet Research,* **20**, e216. doi:10.2196/jmir.9548

Hosmer, D., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed., Wiley Series in Probability and Statistics). New York: Wiley.

Katz, S. (1983). Assessing self-maintenance: Activities of daily living, mobility and instrumental activities of daily living. *Journal of the American Geriatrics Society*, **31**, 721–726. doi:10.1111/j.1532-5415.1983.tb03391.x

Kim, H. (2015). Understanding internet use among dementia caregivers: Results of secondary data analysis using the US caregiver survey data. *Interactive Journal of Medical Research*, **4**:e1. doi:10.2196/ijmr.3127

Kernisan, L. P., Sudore, R. L., & Knight, S. J. (2010). Information-seeking at a caregiving website: A qualitative analysis. *Journal of Medical Internet Research,* **12**, e31. doi:10.2196/jmir.1548

Kovaleva, M., Blevins, L., Griffiths, P., & Hepburn, K. (2019). An online program for caregivers of persons living with dementia: Lessons learned. *Journal of Applied Gerontology*, **38**, 159–182. doi:10.1177/0733464817705958

Li, H. (2015). Informal caregivers' use of the internet for caregiving information. *Social Work in Health Care*, **54**, 532–546. doi:10.1080/00981389.2015.1045577

McKechnie, V., Barker, C., & Stott, J. (2014). Effectiveness of computer-mediated interventions for informal carers of people with dementia-a systematic review. *International Psychogeriatrics,* **26**, 1619–1637. doi:10.1017/S1041610214001045

Navaie, M. (2011). Accessibility of caregiver education and support programs: Reaching hard-to-reach caregivers. In R. W. Toseland, D. H. Haigler, & D. J. Monahan (eds.), *Education and support programs for caregivers* (pp. 13–28). New York: Springer.

Peterson, K., Hahn, H., Lee, A. J., Madison, C. A., & Atri, A. (2016). In the information age, do dementia caregivers get the information they need? Semi-structured interviews to determine informal caregivers' education needs, barriers, and preferences. *BMC Geriatrics,* **16**, 164. doi:10.1186/s12877-016-0338-7

Reinhard, S. C., Levine, C., & Samis, S. (2012). Home alone: Family caregivers providing complex chronic care. Washington, DC: AARP Public Policy Institute. Retrieved from: http://www.aarp.org/content/dam/aarp/research/public_policy_institute/health/

home-alone-family-caregivers-providing-complex-chronic-care-rev-AARP-ppi-health.pdf

Samia, L. W., Hepburn, K., & Nichols, L. (2012). "Flying by the seat of our pants": What dementia family caregivers want in an advanced caregiver training program. *Research in Nursing & Health,* **35**, 598–609. doi:10.1002/nur.21504

Schulz, R., Aranda, M., Beane, S., Czaja, S., Duke, B., Feder, J., ... & Hinton, L. (2016). *Families caring for an aging America.* Washington, DC: Committee on Family Caregiving for Older Adults, National Academies of Sciences, Engineering, and Medicine. Retrieved from: http://www.nationalacademies.org/hmd/Reports/2016/families-caring-for-an-aging-america.aspx

van der Roest, H. G., Meiland, F. J., Jonker, C., & Dröes, R. M. (2010). User evaluation of the dementia-specific digital interactive social chart (DEM-DISC). A pilot study among informal carers on its impact, user friendliness and, usefulness. *Aging & Mental Health,* **14**, 461–470. doi:10.1080/13607860903311741

VanVoorhis, C. W., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in Quantitative Methods for Psychology*, **3**, 43–50. doi:10.20982/tqmp.03.2.p043

Wolff, J. L., & Kasper, J. D. (2006). Caregivers of frail elders: Updating a national profile. *The Gerontologist,* **46**, 344–356. doi:10.1093/geront/46.3.344

Wu, B., Luo, H., Flint, E., & Qin, L. (2015). Dental care utilization among caregivers who care for older adults. *Research on Aging,* **37**, 388–412. doi:10.1177/0164027514537082