

Predictors of Use of Services Among Dementia Caregivers

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Caregivers of persons with dementia do not use community resources until late in the disease process, despite the fact that judicious use of community resources can delay nursing home admission. Data from the National Caregiver Training Project, based on Hall and Buckwalter's (1987) progressively lowered stress threshold (PLST) model, were used to examine variables related to use of community resources. Spouse and adult child caregivers were divided into two groups based on amount of community resources used per week. Within this geographically diverse sample of caregivers, 64% did not use professional services, 79% did not use respite services, and 65% did not use other services. Being a spouse decreased the odds that the caregiver would use community resources. Resource use was also related to the care recipient's problems with activities of daily living and the increase in frequency of memory and behavioral problems.

Keywords: *dementia; caregivers; use of community services*

Despite the fact that Alzheimer's disease (AD) can have potentially disastrous outcomes for those affected as well as those who care for them, many studies have found that caregivers of persons with dementia underutilize formal care (Biegel, Bass, Schulz, & Morycz, 1993; Kosloski, Montgomery, & Karner, 1999). Researchers have documented barriers to use of supportive services such as negative attitudes toward help (Robinson & Yates, 1994) and feelings of guilt (Logsdon & Robinson, 2000). Exploration of the use of community-based services allows health professionals to better identify caregivers likely to use or need higher numbers and specific types of services and may assist in more efficient and effective referral, provision, and management of services. The purpose of the research reported here was to examine

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DOI: 10.1177/0193945904272453

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predictors of use of community resources among caregivers of persons with dementia.

CAREGIVERS AND COMMUNITY SERVICES

Schulz, O'Brien, Bookwala, and Fleissner (1995) reported that studies on caregiving usually focus on social support and satisfaction as key predictors of strain. Older adults and their caregivers can use numerous forms of support services that are intended to maintain community independence, including adult day care, in-home respite, meal services, and support groups. Although these services are increasingly available (except perhaps in rural communities), many still go unused. Because of the substantial burden of caregiving and the importance of support, one might expect caregivers to utilize many community services. A Medicare Alzheimer's Disease Demonstration found that even when caregivers ($N = 5,307$) were given U.S. \$699 per month to purchase community care benefits, this reimbursement was insufficient to increase their level of service use over those who received no funds to purchase services (Newcomer, Yordi, DuNah, Fox, & Wilkinson, 1999). Providing case management and subsidized community services also had little effect on decreasing nursing home entry rates for people with dementia (Miller, Newcomer, & Fox, 1999). Reduction in regular Medicare expenditures was not enough to offset the added demonstration costs. Informal caregiver networks were able to function effectively, regardless of whether a case manager or a subsidized care benefit was present (Fox, Newcomer, Yordi, & Arnsberger, 2000).

Low rates of service utilization appear to characterize most caregivers (Kosloski et al., 1999). Vetter et al. (1998) studied factors influencing the use of available medical, institutional, and legal supports by 36 home care patients with AD and their family caregivers. The rate of utilization of home care support was low and was attributed to lack of caregiver knowledge regarding the availability of home care services and supports. The disparity between service availability and use has led to more emphasis on outreach and referral programs, as well as research on normative beliefs about help seeking and perceived need for care. The seminal work of Collins, Stommel, King, and Given (1991) and Robinson (1988, 1990) prompted incorporation of caregiver attitudes, beliefs, and perceptions into research on service use. Evaluation of the appropriateness of receiving help from family, friends, and formal service providers varies by caregiver age, education, and gender. The perceived severity of dementia is related to the number of tasks with which care recipients receive help and the likelihood that other informal and formal

helpers would be involved in care (Smyth & Milidonis, 1999). These findings are consistent with other reports (Leon et al., 2000; Stommel, Given, Given, & Collins, 1995).

Data from 679 community-dwelling patient-caregiver dyads examined use of paid adult day care, homemakers, and personal care services by stage of dementia. Approximately 18% of the patients with AD attended adult day care, 23% received homemaker services, and 18% received personal care services. Caregivers of persons with dementia in the moderate and severe disease stages more frequently used all three forms of services compared to caregivers of those in the mild stage. Inpatient stays and emergency room visits were rare regardless of disease severity or setting (Leon et al., 2000). The authors suggested that these are first-time baseline estimates of service use from a nationwide sample and can be used in program planning to track trends in service use over time.

As use of services is affected by internal and external factors, we elected to conceptually ground the current study using Andersen and Newman's (1973) societal and individual determinants of health service use framework, which takes into account environmental and individual determinants. The model was developed to facilitate understanding of how individuals use services and to define and measure factors associated with varying degrees of access to health care. Andersen and Newman identified three primary aspects within the model: societal determinants (social norms), health services systems (resources and organizations), and individual determinants. Key components within the individual determinants aspect are predisposing factors (demographics, beliefs), enabling factors (family, community), and illness level (perceived, evaluated). Although Andersen's (1995) model has evolved to address population-based needs and other health care system issues, the impact of individual factors remains a central theme. The individual determinants aspect of the model, in particular, provides a perspective for interpretation of data and an opportunity to evaluate the appropriateness of the model in relation to the experiences of dementia caregivers.

More studies on service utilization among caregivers are needed that include a large number of patients diagnosed with probable AD and who are clinically staged for disease severity. Two research questions were addressed.

RESEARCH QUESTIONS

Research Question 1: What is the strength and direction of relationships among caregiver and care recipient demographic variables and use of community services?

Research Question 2: Of the variables identified in the literature as being relevant to use of services (severity of disease, problem behavior, and social support) and the demographic variables, which is the best predictor of use of community services?

DESIGN

The data for the current study were taken from the baseline assessments of participants in a multisite experiment that used repeated measures over a 1-year data collection period.

SAMPLE

The sample consisted of 241 caregivers who were (a) nonpaid (informal) caregivers, (b) caring for an individual with memory impairment who had been diagnosed by a physician as having ADRD (Alzheimer's disease and related dementias) and who was living in the community, (c) living within a 2-hour drive of the study sites, (d) providing 4 or more hours of supervision and/or care weekly, and (e) cognitively intact. Sample size projections were based on the need for at least 160 cases to achieve a power = .72 to detect an effect for the intervention that contributes as little as 3% more to explained variance. The sample (see Table 1) comprised a mix of spouse (mean age = 71.7 years) and adult child (mean age = 51.9 years) caregivers who scored 2 or below on the Global Deterioration Scale (GDS). For inclusion, caregivers had to be cognitively intact as determined by the GDS score of 2 or below. In addition to demographic variables, data were collected on variables that the literature suggested affect use of community services: severity of disease, problem behaviors, and social support.

METHOD

Instruments

The following instruments were used to measure severity of disease, social support, caregiver burden, problem behavior, and depression.

Global Deterioration Scale (GDS). The GDS was used to determine caregiver eligibility and to stage patients with ADRD. It reflects the progressive nature of the disorder, incorporating the clinician's assessment of

TABLE 1: Demographic Variables (N = 241)

| | M | SD |
|--|------|--------|
| Caregiver age (years) | 64.6 | (13.8) |
| Spouse caregiver | 71.7 | (8.9) |
| Adult caregiver | 51.9 | (11.6) |
| Other caregiver | 51.8 | (14.5) |
| Care recipient age (years) | 76.6 | (8.6) |
| Duration of caregiving (months since onset of memory problems for care recipient) | 52.4 | (43.8) |
| | n | % |
| Caregiver gender | | |
| Women | 179 | 74 |
| Men | 62 | 26 |
| Caregiver relationship to care recipient | | |
| Spouse | 154 | 64 |
| Child | 56 | 23 |
| Other | 31 | 13 |
| Caregiver education (years) | | |
| 0 to 11 | 22 | 9 |
| 12 | 87 | 36 |
| 13 to 16 | 96 | 40 |
| 16 to 24 | 36 | 15 |
| Caregiver ethnicity | | |
| White | 224 | 93 |
| Black | 5 | 2 |
| Hispanic | 5 | 2 |
| Other | 7 | 3 |
| Use of community services (2 hours or more of respite or caregiving assistance per week) | | |
| Yes | 132 | 54 |
| No | 109 | 46 |
| Care recipient gender | | |
| Women | 119 | 49 |
| Men | 122 | 51 |
| Care recipient diagnosis | | |
| Alzheimer's disease | 158 | 66 |
| Multi-infarct dementia | 11 | 5 |
| Mixed-type dementia | 15 | 6 |
| Other | 25 | 10 |
| Unknown | 32 | 13 |
| Living arrangement (Caregiver lives with care recipient) | 204 | 85 |

socioeconomic, cultural, and educational factors. The GDS is divided into seven categories corresponding to distinct, clinically identifiable stages and has been correlated significantly with independent psychometric assessments ($r = .31$ to $.64$, $p < .05$) and clinical ratings of cognition ($r = .31$ to $.66$, $p < .05$; Reisberg, Ferris, DeLeon, & Crook, 1982). Higher scores indicate more cognitive impairment. Significant relationships have also been demonstrated between GDS stages and anatomic brain changes as visualized on computed tomography (CT) scan (DeLeon, 1980).

Social Provision Scale (SPS). The SPS (Cutrona & Russell, 1987) assessed the variable of social support among caregivers. It consists of 24 items measuring six components of social support as set forth by Weiss (1974). Research with caregivers reported coefficient alphas ranging from $.53$ to $.70$ for each of the four-item SPS subscales. A total social support score is computed by summing all the items, and the reliability coefficient for the total score is $.85$. Validity of the scale has been documented through its ability to predict adaptation to stress in a variety of populations (Cutrona & Russell, 1987).

The Philadelphia Geriatric Center Caregiving Appraisal Scales (PGCCAS). Caregiver burden, perceived impact, satisfaction, and mastery were measured by the 28-item PGCCAS (Lawton, Kleban, Moss, Rovine, & Glicksman, 1989). These four factors were confirmed in two groups, an institutionalized sample ($N = 239$) and a respite sample ($N = 632$). Test-retest reliability for 103 caregivers of institutionalized persons with dementia was between $.75$ and $.78$. Validity correlations indicate that subjective burden was highly related to summary burden ratings and significantly to all of the other indicators. Data support the validity of the indices as dimensions of caregiving (Lawton et al., 1989).

The Memory and Behavior Problems Checklist-Revised (MBPC-R). Incidence of untoward behaviors in the patient with AD was rated by frequency on the 32-item MBPC-R (Zarit, Todd, & Zarit, 1986). Guttman split-half reliabilities for the frequency of problems was $.65$, distress ratings were $.66$, and test-retest reliability was $.80$ for frequency measures and $.56$ for the distress measure. Validity has been estimated by correlation ($.69$) with the Mental Status Questionnaire (Kahn, Goldfarb, Pollack, & Peck, 1960). Zarit et al. (1986) found a correlation of $.49$ with the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975). Relatively low correlations suggest that behavioral symptoms may not be entirely a function of cognitive impairment.

Nine-item subscale of the MBPC-R. Functional level of activities of daily living (ADLs) were measured using the nine-item subscale of the MBPC-R (Zarit et al., 1986). Question format and psychometrics are the same as those described above. Separate scoring enables evaluation of ADLs as distinct from behavioral symptoms.

Geriatric Depression Scale (GDepS). Caregiver depression was measured using the GDepS (Yesavage et al., 1983), a 30-item self-report measure that takes about 10 minutes to administer and scores questions in a yes or no format. Designed for use with the elderly, the GDepS omits somatic items that tend to overinflate depression scores in this population. Yesavage et al. (1983) reported reliability coefficients $> .90$ in samples of elderly persons who were community dwelling.

Data for the current study were obtained from a multisite project (Iowa, Minnesota, Indiana, and Arizona) that evaluated the efficacy of a community-based psychoeducational nursing intervention designed to teach home caregivers to manage behavioral problems of persons with AD and ADRD using the progressively lowered stress threshold (PLST) model (Buckwalter, 1998). Following approval from the Institutional Review Boards of the Universities of Iowa, Minnesota, Indiana, and the Mayo Clinic, data were collected by trained nurses and social workers who were blind to treatment condition. This intervention was compared with providing routine information and referrals for case management, community-based services, and support groups (Buckwalter et al., 1999).

Caregivers were divided into two groups: those who used 2 or more hours per week of community resources and those who used less. Because the use of different cutoff points for hours of service use (up to 8 hours) resulted in substantively the same conclusions, the cutoff of 2 hours or more per week was chosen because it was the most inclusive of the possible categories of service use.

ANALYSIS OF DATA

Use of community resources was defined as receiving respite services or caregiving assistance, whether from professionals or nonprofessionals. Just more than one half of the caregivers qualified as using services according to this inclusive definition. Because the number of hours of community resources used was not a normally distributed variable, caregivers were divided into two groups: those who used 2 or more hours per week of

community resources and those who used less. This division was used to construct a dichotomous use of services variable as the dependent variable for analyses. This variable was coded 1 for the 2 or more hours per week group, and 0 for the group using less service. Being a spouse was used as a possible predictor, and was coded 1 if the caregiver was a spouse, and 0 if not. Caregiver gender was scored 1 for women and 0 for men. Living arrangement was also constructed as a dichotomous variable, with 1 representing the caregiver living with the care recipient and 0 representing not living with the care recipient. Level of education, months since onset of dementia for the care recipient, and caregiver age were included as continuous variables. Multiple logistic regression was used to examine which variables were related to use of community resources.

RESULTS

Within this geographically diverse sample of caregivers, 64% did not use professional services, 79% did not use respite services, and 65% did not use other services. For those who did use respite services, the median number of hours used per week was 16. Only 3.7% used 40 or more hours/week of respite. On the other hand, the average number of respite hours the total group of caregivers used each week was 4.17.

Space limitations prohibit a detailed discussion of data obtained from the various instruments. Care recipients in the current study were quite cognitively impaired. Most (85%) had a GDS score between 4 and 6, indicating moderate to severe cognitive decline. Baseline total support measured by the SPS was high ($M = 82$ with a maximum possible score of 88), and these scores did not change appreciably in either the comparison or experimental groups over the course of the study. The interested reader is referred to Gerdner, Buckwalter, and Reed (2002) for information related to findings from the MBPC-R and nine-item functional subscale, and to Stolley, Reed, and Buckwalter (2002) for data from the PGCCAS.

The first research question explored the strength and direction of relationships among individual study variables and use of services. Pearson correlation coefficients (see Table 2) are presented because they are familiar measures of association.

Bivariate logistic regressions yielded identical conclusions about the direction and statistical significance of relationships. Frequency of problem behaviors (ADLs $r = .35$ and memory problems $r = .34$) demonstrated the strongest relationships with use of services. The global measure of dementia, the GDS clinical phase rating, had a slightly lower correlation with the

TABLE 2: Descriptive Statistics and Pearson Correlation Coefficients With Use of Services

| Variable | Minimum | Maximum | M | SD | Pearson Correlation |
|---------------------------------------|---------|-------------|-------|-------|---------------------|
| MBPC -R | | | | | |
| memory or behavior problems frequency | 5 | 117 | 63.16 | 24.34 | .342** |
| MBPC -R | | | | | |
| ADL problem frequency | 0 | 27 | 10.20 | 6.76 | .347** |
| GDS clinical phase rating | 2 | 7 | 4.76 | 1.10 | .323** |
| Social provisions—guidance | 7 | 16 | 13.73 | 2.20 | .207** |
| Social provisions—nurturance | 8 | 16 | 14.35 | 1.76 | .190** |
| Social provisions—reliable alliance | 4 | 16 | 14.04 | 2.21 | .236** |
| Geriatric Depression Scale | 0 | 28 | 7.68 | 6.42 | -.05 |
| PGCCAS subjective CG burden | 12 | 54 | 35.39 | 9.27 | -.039 |
| CG spouse of CR ^a | NA | NA | NA | NA | -.232** |
| CG gender ^b | NA | NA | NA | NA | .132* |
| CG living arrangements ^c | NA | NA | NA | NA | -.137* |
| CG education | 8 | 24 | 13.9 | 2.8 | .096 |
| Months since onset of dementia for CR | 1 | 360 | 52.2 | 43.6 | .069 |
| CG age | | See Table 1 | | | -.163** |

NOTE: NA = not applicable; MBPC = Memory And Behavior Problems Checklist; -R = Revised; ADL = activities of daily living; GDS = Global Deterioration Scale; PGCCAS = Philadelphia Geriatric Center Caregiving Appraisal Scales; CG = caregiver; CR = care recipient.

a. Coded as dummy variable, 1 if caregiver is a spouse, 0 if not. See Table 1 for percentage of CG who are spouses.

b. Coded 1 for women and 0 for men.

c. Coded 1 if CG living with CR and 0 if not.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed).

use of services variable. A negative relationship was noted between spouse caregivers and use of services; that is, spouse caregivers were significantly less likely to use services. Caregiver age, caregiver gender, and caregiver living arrangements had modest ($< .20$) correlations with use of services. Neither caregiver education, depression, nor perceived burden was related to service usage. Rather, problems experienced and caregiver relationship (spouse) were most related to use of services.

The second research question asked which variable was the best predictor of use of services. When all the study variables with a significant bivariate relationship with use of community service were entered into a multiple

TABLE 3: Final Multiple Logistic Regression Model

| | <i>Estimate</i> | SE | <i>Wald</i> χ^2 | df | p | <i>Exp(b)</i> |
|---|-----------------|-------|----------------------|----|------|---------------|
| Frequency of ADL problems | .086 | .029 | 9.103 | 1 | .003 | 1.090 |
| Frequency of memory or behavior problems | .019 | .008 | 6.250 | 1 | .012 | 1.019 |
| Spouse | -1.156 | .338 | 11.698 | 1 | .001 | .315 |
| Social support | .243 | .077 | 9.848 | 1 | .002 | 1.275 |
| Constant | -4.560 | 1.225 | 13.862 | 1 | .000 | .010 |

NOTE: ADL = activities of daily living.

logistic regression, four variables were found to have a statistically significant unique effect on use of community resources (see Table 3). Being a spouse of the care recipient decreased the odds of using community resources ($p < .001$).

A tendency for younger spouses to be somewhat more likely than older spouses to use community resources appeared when the interaction of the spouse effect with caregiver age was examined; however, this interaction was not statistically significant at the .05 level. The odds that the caregiver would use community resources increased as the care recipient's problems with ADLs increased ($p < .05$) and as the frequency of memory and behavioral problems increased ($p < .01$). Finally, the odds of service use increased as the caregiver's score on the Reliable Alliance subscale of the SPS increased ($p < .01$). The direction of this effect is open to question. The use of community resources could increase the caregiver perception of having someone to rely on rather than vice versa. The Nagelkerke R^2 for the logistic regression model (Nagelkerke, 1991), which is a likelihood-based analogue of R^2 in multiple regression, was .314. Being a spouse made the largest unique contribution (.060) to the Nagelkerke R^2 , indicating it was the best predictor of use of services. The direction of the relationship, however, was negative. Spouse caregivers tended not to use services in this sample.

DISCUSSION

According to the conceptual framework, barriers to use of services identified by caregivers occur at three levels: individual, societal, and institutional. Individual barriers reflect factors that inhibit seeking help that originate from within the caregivers themselves. Societal barriers reflect factors that occur external to the caregivers, which increase difficulty of efforts to

seek help. Institutional barriers were factors related to accessing the resources identified by the caregivers. Findings of the current study were interpreted using only the individual-level factors.

Our findings validate many other studies indicating that caregivers use limited community services (Leon et al., 2000; Vetter et al., 1998; Webber, Fox, & Burnette, 1994). Relating back to Andersen and Newman's (1973) model, the main finding of the current study was that the individual category of spousal relationship was most predictive of reluctance to use services. Perhaps the accepted role of spouse was interpreted to mean that caregiving must be performed alone and without help, or the spouse caregiver felt a sense of betraying the spousal relationship by using services. Another finding was that overall, caregivers generally tended not to use services. This finding is well supported throughout the caregiver literature. Zarit, Stephens, Townsend, Greene, and Leitsch (1999) identified two main factors related to limited use of services. First, many caregivers waited too long to use services, and their relative was then too frail to benefit. In many instances, stopping service use was precipitated by an illness in the patient, which then led to nursing home placement. A second factor noted was that spouses were more likely to use services for only a brief period of time. Many spouses experience difficulty turning the care of their loved one over to someone else. Use of services may be more emotionally difficult for a spouse than an adult child caregiver or friend; therefore, spouses may not realize the same benefit as other caregivers. Spouse caregivers also may encounter more resistance to use of services from the care recipient, who may inflict guilt in a way that is not possible in other caregiving relationships. Thus, the negative consequences of use of services may overshadow the benefit for spouses. A different interpretation that might be considered is that low service use may not be identified as a weakness. On average, caregivers in the current study had been providing in-home care for a little more than 4 years. Low service use might indicate the caregiver feels strong enough to manage alone and does not yet need community services.

A second barrier at the individual level (Andersen & Newman, 1973) was within the category of disability of the person with dementia. Caregivers having more difficulty managing the care recipient's ADLs and behavior problems were more likely to use services. These caregivers might benefit from in-home help such as homemaker services or from outreach and teaching interventions related to management of difficult behaviors. Our findings are similar to those of Bannerjje and MacDonald (1996) who found that dementia-related behavior problems affected use of formal and informal home care services, and Dewan and Phillips (2001) who determined that

problem behaviors in dementia resulted in increased use of case management time. The current study identified caregivers experiencing difficulty with management of behaviors as a target population for rapid, in-home behavioral management interventions.

A rather surprising finding was that depression and perceived burden were not related to use of services. One explanation might be that, although higher depression might suggest the need for assistance, depressive symptoms also inhibit the caregiver from taking action to improve the situation. Depression may result in psychological immobility, including apathy in problem solving. The caregiver may not have enough energy to make decisions, take action, seek help, or access community services.

Interpretation of the effects of caregiver characteristics on use of services is complicated by the interrelationship of many caregiver characteristics. For example, living arrangement is highly correlated with being a spouse ($\phi = .52, p < .0001$). More than 98% of spouse caregivers lived with the care recipient compared to 59% of nonspouse caregivers. Because of this, the effects on use of services of living arrangement and being a spouse are confounded. Tennstedt, Crawford, and McKinlay (1993) suggested that living arrangement may be an important determinant of caregiver perception of use of services. When being a spouse and living arrangement were included in the logistic regression model predicting use of services, the living arrangement effect was no longer statistically significant, while the spouse effect remained significant.

Limitations

The data for the current study were part of a larger research project that evaluated the efficacy of a community-based psychoeducational nursing intervention. The generalizability of this secondary analysis may be limited because the attributes of those participating in the intervention study may differ in important ways from other caregivers. When the principal investigator of the major study compared the sociodemographic characteristics of her sample to those in the nationwide National Alliance for Caregiving and AARP survey of 1997, no significant differences, with the exception of ethnicity, were noted. Lack of ethnic diversity among participants was a study limitation. Despite focused recruitment efforts, only 7% of the caregivers were non-White, whereas 93% were White. A majority (82%) of participants reported that caregiving did not represent a financial hardship.

In summary, the Andersen and Newman (1973) conceptual framework was useful for extending research on formal service use. Results of the

current study indicate that caregiver relationship of spouse was most predictive of reluctance to use services. Resource use was also related to the care recipients' problems with ADLs and increases in the frequency of their memory and behavioral problems.

REFERENCES

- Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical care utilization in the United States. *Milbank Memorial Fund Quarterly Health and Society, 51*, 95-124.
- 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.
- Bannerjje, S., & MacDonald, A. (1996). Mental disorder in an elderly home care population: Association with health and social service use. *British Journal of Psychiatry, 168*, 750-756.
- Biegel, D., Bass, D., Schulz, R., & Morycz, R. (1993). Predictors of in-home and out-of-home service use by family caregivers of Alzheimer's disease patients. *Journal of Aging and Health, 5*, 419-438.
- Buckwalter, K. C. (1998). *PLST model: Effectiveness for rural ADRD caregivers, final report* (R01-NR03234). Washington, DC: National Institute for Nursing Research.
- Buckwalter, K. C., Gerdner, L. A., Hall, G. R., Kelly, A., Kohout, F., Richards, B., et al. (1999). Effects of family caregiver home training based on the progressively lowered stress threshold model. In S. H. Gueldner & L. Poon (Eds.), *Gerontological nursing issues for the 21st century* (pp. 81-98). Indianapolis, IN: Center Nursing Press
- Collins, C., Stommel, M., King, S., & Given, C. W. (1991). Assessment of the attitudes of family caregivers toward community services. *The Gerontologist, 31*, 756-761.
- Cutrona, C. E., & Russell, D. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), *Advances in personal relationships* (Vol. 1, pp. 37-67). Greenwich, CT: JAI.
- DeLeon, M. (1980). Computed tomography evaluations of brain-behavior relationships in senile dementia of the Alzheimer's type. *Neurobiology of Aging, 1*, 69.
- Dewan, S., & Phillips, V. L. (2001). Agitation and dementia-related problem behaviors and case management in long-term care. *International Psychogeriatrics, 13*, 5-22.
- Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). Mini-Mental State: A practical method of grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12*, 189-198.
- Fox, P., Newcomer, R., Yordi, C., & Arnsberger, P. (2000). Lessons learned from the Medicare Alzheimer Disease Demonstration. *Alzheimer Disease and Associated Disorders, 14*, 87-93.
- Gerdner, L. A., Buckwalter, K. C., & Reed, D. (2002). Impact of a psychoeducational intervention on caregiver response to behavioral problems. *Nursing Research, 51*, 363-374.
- Hall, G. R., & Buckwalter, K. C. (1987). Progressively lowered stress threshold: A conceptual model for care of adults with Alzheimer's disease. *Archives of Psychiatric Nursing, 1*, 399-406.
- Kahn, R. L., Goldfarb, A. I., Pollack, M., & Peck, A. (1960). A brief objective measure for the determination of mental status in the aged. *American Journal of Psychiatry, 117*, 326-329.
- Kosloski, K., Montgomery, R. J., & Karner, T. X. (1999). Differences in the perceived need for assistive services by culturally diverse caregivers of persons with dementia. *Journal of Applied Gerontology, 18*, 239-256.

- Lawton, M. P., Kleban, M. H., Moss, M., Rovine, M., & Glicksman, A. (1989). Measuring caregiving appraisal. *Journal of Gerontology*, *44*, 61-71.
- Leon, J., Neumann, P. J., Hermann, R. C., Hsu, M. A., Cummings, J. L., Doraiswamy, P. M., et al. (2000). Health-related quality-of-life and service utilization in Alzheimer's disease: A cross-sectional study. *American Journal of Alzheimer's Disease*, *15*, 94-108.
- Logsdon, M. C., & Robinson, K. M. (2000). Helping women caregivers obtain support: Barriers and recommendations. *Archives of Psychiatric Nursing*, *14*, 244-248.
- Miller, R., Newcomer, R., & Fox, P. (1999). Effects of the Medicare Alzheimer's Disease Demonstration on nursing home entry. *Health Services Research*, *34*, 691-710.
- Nagelkerke, N. J. (1991). A note on a general definition of the coefficient of determination. *Biometrika*, *78*, 691-692.
- National Alliance for Caregiving and AARP. (1997). *Family caregiving in the US: Findings from a national survey*. Washington, DC: Author.
- Newcomer, R., Yordi, C., DuNah, R., Fox, P., & Wilkinson, A. (1999). Effects of the Medicare Alzheimer's Disease Demonstration on caregiver burden and depression. *Health Services Research*, *34*, 669-689.
- Reisberg, B., Ferris, S. H., DeLeon, M. J., & Crook, T. (1982). The Global Deterioration Scale for assessment of primary degenerative dementia. *American Journal of Psychiatry*, *139*, 1136-1139.
- Robinson, K. (1988). A social skills training program for family caregivers. *Advances in Nursing Science*, *10*, 59-72.
- Robinson, K. (1990). The relationship between social skills, social support, self-esteem, and burden in adult caregivers. *Journal of Advanced Nursing*, *15*, 788-795.
- Robinson, K., & Yates, K. (1994). Effects of two caregiver training programs on burden and attitudes toward help. *Archives of Psychiatric Nursing*, *8*, 312-319.
- Schulz, R., O'Brien, A. T., Bookwala, J., & Fleissner, K. (1995). Psychiatric and physical morbidity effects of dementia caregiving: Prevalence, correlates and causes. *The Gerontologist*, *35*, 771-791.
- Smyth, K. A., & Milidonis, M. K. (1999). The relationship between normative beliefs about help seeking and the experience of caregiving in Alzheimer's disease. *Journal of Applied Gerontology*, *18*, 222-238.
- Stolley, J. C., Reed, D., & Buckwalter, K. C. (2002). Caregiving appraisal and interventions based on the progressively lowered stress threshold model. *American Journal of Alzheimer's Disease and Other Dementias*, *17*, 110-120.
- Stommel, M., Given, B. A., Given, C. W., & Collins, C. (1995). The impact of the frequency of care activities on the division of labor between primary caregivers and other care providers. *Research on Aging*, *17*, 412-433.
- Tennstedt, S. L., Crawford, S., & McKinlay, J. B. (1993). Determining the pattern of community care: Is coresidence more important than caregiver relationship? *Journal of Gerontology*, *48*, S74-S83.
- Vetter, P., Steiner, O., Kraus, S., Moises, H., Kropp, P., Moller, W. D., et al. (1998). Factors affecting the utilization of homecare supports by caregiving relatives of Alzheimer patients. *Dementia and Geriatric Cognitive Disorders*, *9*, 111-116.
- Webber, P., Fox, P., & Burnette, D. (1994). Living alone with Alzheimer's disease: Effects on health and social service utilization patterns. *The Gerontologist*, *34*, 8-14.
- Weiss, R. S. (1974). The provisions of social relationships. In Z. Rubin (Ed.), *Doing unto others* (pp. 17-26). Englewood Cliffs, NJ: Prentice Hall.

- Yesavage, J. A., Brink, R. A., Rose, T. L., Lum, O., Huang, V., Adey, M., et al. (1983). Development and validation of a geriatric depression screening scale: Preliminary report. *Journal of Psychiatric Research, 17*, 37-49.
- Zarit, S. H., Stephens, M. A. P., Townsend, A., Greene, R., & Leitsch, S. A. (1999). Patterns of adult day service use by family caregivers. A comparison of brief versus sustained use. *Family Relations, 48*, 355-361.
- Zarit, S. H., Todd, P. A., & Zarit, J. M. (1986). Subjective burden of husbands and wives as caregivers: A longitudinal study. *The Gerontologist, 26*, 260-266.