

Is It Beneficial to Involve a Family Member? A Meta-Analysis of Psychosocial Interventions for Chronic Illness

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Links between chronic illness and family relationships have led to psychosocial interventions targeted at the patient's closest family member or both patient and family member. The authors conducted a meta-analytic review of randomized studies comparing these interventions with usual medical care ($k = 70$), focusing on patient outcomes (depression, anxiety, relationship satisfaction, disability, and mortality) and family member outcomes (depression, anxiety, relationship satisfaction, and caregiving burden). Among patients, interventions had positive effects on depression when the spouse was included and, in some cases, on mortality. Among family members, positive effects were found for caregiving burden, depression, and anxiety; these effects were strongest for nondementing illnesses and for interventions that targeted only the family member and that addressed relationship issues. Although statistically significant aggregate effects were found, they were generally small in magnitude. These findings provide guidance in developing future interventions in this area.

Key words: chronic illness, family, psychosocial interventions, meta-analysis

It is well documented that physical illness exacts a toll on the quality of life of patients and families alike. The patient's illness symptoms, negative mood, and need for emotional support or physical assistance are often taxing to close family members (Akamatsu, Stephens, Hobfoll, & Crowther, 1992; Turk & Kerns, 1985). Family members, in turn, have a strong influence on the patient's psychological adjustment and management of illness, including adherence to a treatment regimen and adoption of other health behaviors that promote functioning and recovery (Burg & Seeman, 1994; Lyons, Sullivan, Ritvo, & Coyne, 1995).

Awareness of the links between adult physical illness and family relationships has led researchers to develop or modify patient-focused psychosocial interventions to include the patient's family, most commonly the spouse (Keefe, Buffington, Studts, & Rumble, 2002). Similarly, psychosocial interventions have been developed specifically for the family member on whom the patient primarily depends for assistance and support (Schulz, O'Brien, et al., 2002; Sorensen, Pinguart, & Duberstein, 2002). Although these two treatment approaches have emerged from separate research literatures, both are family oriented in terms of their focus on the patient's closest family member, either with or without patient involvement. The purpose behind intervening with family members varies across individual research studies within these literatures. The goal may be to improve the health or well-being of the patient, the closest family member, or both.

Despite the growing public health significance of this area, we know little about the efficacy of treatment approaches that involve a family member. A quantitative review is especially important in light of the suggestion that, in some contexts, this approach may be inappropriate or even detrimental for patients (Coyne, 1995; Dracup, Guzy, Taylor, & Barry, 1986). Here we report the findings of a cross-literature meta-analytic review of interventions involving a family member, focusing on both patient and family member outcomes.

An extensive correlational research literature provides strong justification for targeting the patient's closest family member through psychosocial or behavioral interventions. Family factors such as emotional support, intimacy, conflict, criticism, and over-protective or solicitous behaviors have been linked with change in

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This research was supported by National Institutes of Health Grants K01 MH065547 and P30 MH52247 and Pittsburgh Mind-Body Center Grant P50 HL65111-65112 to the University of Pittsburgh and Carnegie Mellon University. Gregory E. Miller was supported by an American Heart Association Grant in Aid, a National Alliance for Research on Schizophrenia and Depression Young Investigator Award, and a Michael Smith Foundation for Health Research Career Scholar Award. We thank Deborah J. Jones and Daniel H. Morrow for helpful comments on earlier versions of this article.

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a variety of patient physical and mental health outcomes, including psychological well-being, health behaviors, pain severity, and physical disability. These associations have been observed across different chronic illnesses such as heart disease (see reviews by Lyons et al., 1995; Rankin-Esquer, Deeter, & Taylor, 2000), chronic pain (see reviews by Payne & Norfleet, 1986; Schwartz & Ehde, 2000), rheumatic disease (see reviews by Danoff-Burg, Ayala, & Revenson, 2000; Zautra & Manne, 1992), and cancer (see reviews by Cooley & Moriarty, 1997; Kristjanson & Ashcroft, 1994). Much of this research has focused on the patient's spouse, because the spouse often has the greatest potential to affect the patient's health owing to the number of opportunities for support provision and interpersonal conflict (Kiecolt-Glaser & Newton, 2001).

A significant amount of research also has demonstrated that the patient's close family members may experience poorer psychological well-being, decreased relationship quality with the patient, caregiving burden, and poorer physical health. These consequences have been observed among various patient–family populations (see the reviews just cited) as well as among family members of older adults coping with multiple impairments (Schulz, O'Brien, Bookwala, & Fleissner, 1995; Wright, Clipp, & George, 1993). The severity of the patient's illness is related to strain in family relationships and poorer family member well-being, and illnesses involving a cognitive impairment component appear to be especially stressful for family members (Ory, Hoffman, Yee, Tennstedt, & Schulz, 1999).

Previous meta-analytic reviews have shown that psychosocial interventions aimed at ill individuals provide significant benefits beyond the effects of usual medical care. That is, interventions such as support groups, patient education, and cognitive–behavioral skills training have small to medium effects on the psychological functioning and health status of individuals with illnesses such as cancer, heart disease, and arthritis (e.g., Dusseldorp, van Elderen, Maes, Meulman, & Kraaij, 1999; Hawley, 1995; Linden, Stossel, & Maurice, 1996; Meyer & Mark, 1995). Given the bidirectional links between patient and family member outcomes, psychosocial interventions that include the patient's closest family member may provide a greater benefit than medical or psychosocial interventions focused solely on the patient in terms of improvements in both individuals' health and well-being.

A handful of relevant reviews have been published on this topic. Campbell and Patterson (1995) conducted a review of family interventions for individuals with cardiovascular disease (i.e., hypertension or symptoms resulting from a myocardial infarction [MI]) or cognitive impairment (i.e., dementia or stroke), as compared with usual medical care. They concluded that involving family members in the treatment of hypertension was more beneficial than usual care in terms of lowering blood pressure, but there was little evidence that family intervention was more beneficial for individuals recovering from an MI. In their review of findings from studies involving individuals with dementia or a history of stroke, they concluded that caregiver interventions may enhance the mental health of caregivers and delay nursing home placement; in addition, they found that psychoeducational approaches were most promising. The Campbell and Patterson review, although notable for adopting a broad definition of family interventions and spanning several research literatures, was non-quantitative and focused on only two adult illness populations.

Other reviews of the efficacy of family interventions have focused specifically on those implemented with family members providing care for older adults with medical frailty or dementia (e.g., Cooke, McNally, Mulligan, Harrison, & Newman, 2001; Pusey & Richards, 2001; Schulz, O'Brien, et al., 2002; Toseland & Rossiter, 1989). The majority of these reviews have been descriptive rather than quantitative and have focused primarily on family member outcomes. Quantitative reviews in this area have generally revealed small to medium effect sizes for family interventions in terms of reduced caregiving burden and negative mood; there has been little or no attention to patient outcomes (e.g., Acton & Kang, 2001; Knight, Lutzky, & Macofsky-Urban, 1993; Sorensen et al., 2002).

The Current Review

In contrast to previous reports, we used meta-analysis to focus on the benefits to patients and family members of interventions that involved a family member and were tested with multiple illness populations. We selected a set of outcomes that have received much attention in correlational research and that apply to different chronic illnesses (i.e., are not illness specific). The patient outcomes examined in this review were depressive symptoms, anxiety, relationship satisfaction, physical disability, and mortality. The family member outcomes examined were depressive symptoms, anxiety, relationship satisfaction, and caregiving burden.

We also examined four potential moderators that may specify for whom or under what conditions an intervention involving family is most beneficial (Baron & Kenny, 1986; Kraemer, Wilson, Fairburn, & Agras, 2002). First, owing to the often inalterable course of dementia and previous research showing that psychosocial interventions for family members of these individuals are less effective than those for family members of other ill older adults (Sorensen et al., 2002), we expected similar findings among dementia patients and their family members in comparison with other patient–family populations. Second, because the strongest links between chronic illness and family relationships are often found in the marital relationship (e.g., Kiecolt-Glaser & Newton, 2001; Parmelee, 1983), we expected that the largest effects in terms of patient or family member outcomes would be observed in family interventions focusing on spouses or couples.

Third, we expected that family interventions targeting both patient and family member, rather than only the family member, would have a greater impact on patient as well as family outcomes because of their ability to reach an additional person and to achieve synergies through this dyadic approach (Martire & Schulz, 2001). Finally, we expected to find that family interventions that included content addressing relationship issues between patient and family member would be more beneficial to both parties than interventions that focused solely on individual issues of the patient or family member. This prediction was based on the wealth of empirical research showing the bidirectional associations between patient functioning and family factors such as support and relationship quality (e.g., Burg & Seeman, 1994; Turk & Kerns, 1985).

Method

Identification of Studies

Our literature search was aimed at identifying published evaluations of family psychosocial interventions, defined as nonmedical interventions that are psychologically, socially, or behaviorally oriented and that involve a member of an adult patient's family or both the patient and family member. That is, we aimed to identify interventions that were family oriented in terms of the individual (or individuals) for whom they were designed rather than in terms of measured outcomes. Our review did not focus on studies testing psychosocial interventions for ill children and their parents because the linkages between illness and family relationships are likely to be very different in this population, adding significant heterogeneity to the group of studies analyzed. In addition, we focused on published, peer-reviewed studies because we thought that they would be most methodologically rigorous and would thus yield the strongest conclusions in regard to treatment efficacy.

To locate studies for review, we conducted computerized literature searches of numerous electronic databases for studies published through October of 2002. All searches were limited to peer-reviewed, English-language journals and studies focusing on adult populations (i.e., 18 years of age or older). Keyword searches of the interlinked search engine OVID included the following databases: Medline (1966–2002), PsycINFO (1967–2002), CancerLIT (1975–2002), Cumulative Index to Nursing and Allied Health Literature (1982–2002). We also searched the following evidence-based medicine databases for the period 1991–2002: American College of Physicians Journal Club, Cochrane Controlled Trials Register, Cochrane Database of Systematic Reviews, and Database of Abstracts of Reviews of Effectiveness. Combinations of keywords in the following groupings were used for these OVID searches: (a) patient, ill, illness, or health; (b) family, caregiver, caregiving, marriage, marital, spouse, spousal, couple, or partner; and (c) treatment, intervention, or support.

In addition to OVID, we searched several other university-subscribed databases across all available dates of publication: Educational Resources Information Center (ERIC), Social Work Abstracts, Expanded Academic ASAP, Academic Search Elite, PubMed, ISI Web of Knowledge, and Web of Science. Also, we conducted Internet-based searches of the PsychNet (United Kingdom), Economic and Social Research Council (United Kingdom), Inter-University Consortium for Political and Social Research, and PDQ/NCI Publications Locator databases and the tables of contents of all Elsevier Publications medical journals. Keyword searches of these databases involved combinations of the term family, caregiving, or caregiver

and the term intervention or treatment. Next, the ancestry method of examining references in review articles or empirical articles was used to identify intervention studies not captured through database searching. This was an important strategy for identifying studies, because inclusion of family members in a psychosocial intervention was often not explicit in the title or abstract of a journal article.

All studies were reviewed to determine whether they involved evaluation of a family psychosocial intervention for a physician-diagnosed medical illness (i.e., studies that evaluated psychosocial interventions for at-risk populations such as obese individuals and smokers were excluded) and enrolled patients and family members who were living independently in their home(s). A pool of 235 studies was identified. All studies were required to meet four additional criteria to be included. First, as a means of focusing on those studies that were most methodologically rigorous, all studies had to involve the use of a randomized, controlled design in which participants had an equal chance of being assigned to the family intervention or control condition and in which preintervention–postintervention data were collected. Second, all of the studies had to include a comparison of family intervention with usual patient medical care. Studies in which family intervention was compared only with patient psychosocial intervention were excluded because our search revealed that there were not enough randomized, controlled studies to allow separate analyses addressing this comparison ($k = 8$).

Third, in the studies that targeted both patient and family member, the number of family members enrolled had to be at least 90% of the number of enrolled patients. We included this criterion because studies enrolling a subgroup of family members may involve unknown selection effects as a result of the failure to request or require participation from a family member of each patient. Finally, all studies had to report data for patients or family members, or both, on one or more of nine outcomes (see Table 1). These outcomes were chosen because they represented the psychosocial and physical health indicators that were of greatest conceptual interest and they were not disease specific; in addition, in the case of each of the outcomes, effect sizes were available from at least two separate studies.

Of the 235 studies identified, 70 (29.8%) met the criteria for inclusion. These studies were reported in 72 articles and are designated in the reference list by asterisks. The primary reason that studies were excluded was that a randomized, controlled design was not used (119 of the 165 excluded studies, or 72.1%). A number of randomized, controlled studies also were excluded because they compared a family intervention with a patient psychosocial intervention, an attention control condition, or another family intervention ($k = 21$, or 12.7%); they did not enroll 90% complete

Table 1
Description of Outcomes Included

Outcome	Description	Examples of measures
Patient only		
Physical disability	Degree of independence in carrying out basic and instrumental ADLs	Barthel Index (Mahoney & Barthel, 1965); Katz ADL scale (Katz et al., 1963)
Mortality	Deceased at follow-up	
Family member only		
Caregiving burden	Psychosocial or physical stress or strain attributed to caregiving responsibilities	Burden Interview (Zarit & Zarit, 1990); Revised Memory and Behavior Problem Checklist (Teri et al., 1992)
Patient and family member		
Depressive symptomatology	Feelings of depression, hopelessness, or sadness	Center for Epidemiological Studies Depression Scale (Radloff, 1977); Beck Depression Inventory (Beck et al., 1961)
Anxiety	Worry, restlessness, irritability, tension, panic, or fear	State-Trait Anxiety Inventory (state scale; Spielberger et al., 1970); Brief Symptom Inventory (anxiety scale; Derogatis et al., 1975)
Relationship satisfaction	Degree of satisfaction in relationship with family member/patient	Dyadic Adjustment Scale (Spanier, 1976)

Note. ADL = activities of daily living.

patient–family member dyads ($k = 10$, or 6.1%); or they did not include one or more of the nine chosen outcomes ($k = 15$, or 9.1%).

Meta-Analytic Procedure

Meta-analysis is a tool for synthesizing research findings, and it proceeds in two phases. In the first phase, effect sizes are computed for each study. An effect size represents the magnitude of the relationship between two variables, independent of sample size. In the present context, it can be viewed as a measure of how much a family intervention group and a usual medical care control group differ in terms of a particular patient or family member outcome at the end of treatment. In the second phase of meta-analysis, effect sizes derived from individual studies are combined to arrive at an aggregate effect size for each outcome of interest.

We calculated effect sizes from individual studies using statistics published in the original reports. We computed Cohen's d values by subtracting the control group mean from the intervention group mean and dividing this value by the pooled sample standard deviation.¹ In computing effect sizes, we chose to focus on postintervention data from the first available follow-up in the case of all outcomes except patient mortality. This approach was chosen because psychosocial intervention effects for these outcomes tend to be strongest soon after implementation and dissipate over time. In regard to patient mortality, we computed effect sizes from the last time point at which these data were available, because the likelihood of this particular outcome tends to increase over time. Hence, the effect sizes reported here should be viewed as representing the maximum benefits a patient or family member is likely to receive from an intervention.²

The Comprehensive Meta-Analysis software program³ (Borenstein & Rothstein, 1999) was used in aggregating effect size estimates from individual studies by means of random-effects models. Separate random-effects models were computed for each patient and family member outcome included in the meta-analysis. Each model yielded an aggregated weighted effect size (d). The software program weighted each d statistic before aggregation by multiplying its value by the inverse of its variance; this procedure enabled larger studies to contribute to effect size estimates to a greater extent than smaller ones.

We determined whether each aggregate effect size was statistically significant and arose from a heterogeneous group of studies. Following convention, aggregate effect sizes were considered statistically different from zero when their corresponding z value was greater than 1.96 and the 95% confidence interval around them did not include zero (Rosenthal, 1991; Shadish & Haddock, 1994). To examine whether the studies contributing to each aggregate effect size shared a common population value, we computed the heterogeneity statistic Q (Shadish & Haddock, 1994), which is chi-square distributed with $k - 1$ degrees of freedom, where k represents the number of independent effect sizes included. A statistically significant Q value indicates that there is an extensive amount of variability across studies that might be explained by moderating variables.

We also used meta-analysis to examine four categorical moderators of intervention effects; we did so by conducting analyses on subgroups after analyzing all studies for a particular outcome. The specific moderators were illness population (dementia vs. other), family population (spouses only vs. a mixed sample of family members), intervention target (family member only vs. both patient and family member), and relationship focus (yes or no). Family member involvement was defined as, at minimum, attendance or observation during the patient's psychosocial treatment. In terms of the relationship focus moderator, we examined whether or not intervention materials were described by study investigators as addressing issues such as communication between the patient and family member, the effects of illness on relationship quality, the effects of family behaviors or attitudes on recovery from illness, or grief from the loss of emotional or physical intimacy in the relationship. These issues could have been addressed with only the family member or with both members of the dyad.

Two of the authors (Lynn M. Martire and Amy P. Lustig) coded each study for the four moderators, and discrepancies in coding were resolved

by an independent rater. Given our conceptual interest in these moderators, we recomputed analyses not only in the presence of a statistically significant Q value but also in its absence. We were unable to examine some of the moderators of intervention effects in cases in which fewer than two effect sizes were available for a particular subgroup. In our description of significant moderator findings for each outcome, we note any substantial overlap between moderators (which would indicate that effects may not be independent).

Results

The average patient sample size in the studies included in our meta-analysis was 163, and the average family member sample size was 167. Sample sizes varied widely, however, and two studies had particularly large samples (Jones & West, 1996, $N = 4,408$; Newcomer, Yordi, DuNah, Fox, & Wilkinson, 1999, $N = 2,042$). The Jones and West study involved a multisite intervention with post-MI patients and their spouses, whereas Newcomer et al. tested a demonstration project with Alzheimer's disease patients and their family members.

Excluding the two large studies, average sample sizes were 113 for patients and 87 for family members. Average ages of patients and family members in studies that provided this information were 67.5 years ($SD = 12.5$) and 59.1 years ($SD = 7.5$), respectively. The vast majority of family interventions (86%) were multicomponent in nature, combining different types of psychosocial or behavioral approaches. The most common combinations were education with emotional support, emotional support with skills

¹ In cases in which descriptive statistics were not available, we computed d values from inferential statistics using standard formulas (Rosenthal, 1991). When a study failed to report statistical data but indicated that there were significant differences, we computed effect sizes assuming that p values were equivalent to .05. When a study failed to report relevant statistics but indicated that groups did not differ with respect to an outcome, we assumed that there was no difference between the groups. Because there is seldom no difference between two groups, this process represented a very conservative strategy.

² Two strategies were used to avoid violating the assumption that each effect size for an outcome was statistically independent of other effect sizes for that outcome (Rosenthal, 1991). First, effect sizes for studies comparing more than one family intervention with a usual medical care control group were obtained by calculating the average effect size across each comparison of family intervention and control group. Second, for studies involving more than one measure of an outcome (e.g., measurement of depressive symptoms with the Center for Epidemiological Studies Depression Scale [Radloff, 1977] and the Beck Depression Inventory [Beck, Ward, Mendelson, Mock, & Erbaugh, 1961]), one effect size was calculated by averaging across the effect sizes found with each measure.

³ The random-effects model views each study in a meta-analysis as a random observation drawn from a universe of potential investigations. As such, it assumes that the magnitude of the relationship between family interventions and patient or family member outcomes differs across studies as a result of random variance associated with sampling error and nonrandom variance that reflects important disparities between studies (Shadish & Haddock, 1994). The latter source of variance was highly likely in the studies included in this review because of the wide variability in illness parameters, family populations, and methods used to deliver ostensibly similar interventions. Random-effects models enable researchers not only to make inferences about studies that have been done but also to generalize to studies that might be conducted in the future (Shadish & Haddock, 1994).

training, and education with emotional support and skills training. Other intervention approaches included health care planning, structured exercise programs, and temporary transfer of patient care to a formal care provider (e.g., adult day care). Approximately 40% of the studies reported one or more of the family member outcomes selected for the present meta-analysis, 23% reported selected patient outcomes, and 37% reported both patient and family member outcomes.

Table 2 provides descriptive information for these studies according to type of moderator. As can be seen, targeted populations included those with illnesses that are the most common causes of mortality in the United States (i.e., heart disease and cancer) as well as other illnesses. The most common illness group consisted of individuals suffering from dementia due to Alzheimer's disease or a related disorder; most had mild to moderate dementia. Of the 15 family interventions focusing on individuals with heart disease, 6 targeted post-MI patients, 6 targeted postsurgical or mixed samples of patients, 2 targeted congestive heart failure patients, and 1 targeted individuals with essential hypertension. Studies also targeted frail older adults who suffered from one or more chronic illnesses or conditions such as osteoarthritis, pulmonary disease, and Parkinson's disease. The 5 cancer studies targeted breast cancer (2 studies), lung cancer (1 study), and a mixed sample of cancer patients (2 studies).

Table 2 also shows that most family interventions focused on a mixture of family members such as the spouse, an adult son or daughter, and a sibling. The majority of studies (54%) were described as targeting both patient and family member. Despite the fact that the links between illness and interpersonal functioning in the family often serve as the rationale for family interventions, only a slight majority of studies were described by investigators as addressing issues that may have been important in the relationship between the patient and family member.

Meta-analytic results for the five patient outcomes and four family outcomes are presented in Tables 3 and 4, respectively. Values in the first column of these tables refer to the number of

studies (k) available for the computation of a specific effect size; k values ranged from 5 to 41 in our analyses. The second column provides the sample size on which the effect size was based. The third column shows the aggregate effect size d . Effect sizes of .20, .50, and .80 correspond to small, medium, and large effects, respectively (Cohen & Cohen, 1983). Positive d values indicate that family intervention was associated with greater improvement on a particular outcome than was usual medical care.

Patient Outcomes and Moderator Findings

The meta-analysis yielded little evidence that family interventions reliably ameliorated patients' depressive symptoms in comparison with usual medical care ($d = .14, p = .11, k = 27$). However, there was substantial variability among this group of studies as indicated by the Q statistic. Our stratified analyses of the four moderator variables indicated that, as predicted, family interventions including only spouses were successful in reducing patients' depressive symptoms ($d = .33, p = .04, k = 13$; see Table 3). There was a significant amount of variability in outcomes among these 13 studies. As we predicted, interventions involving other family members, such as mixed groups of adult children and spouses, did not produce reliable changes in patients' depressive symptoms (see Table 3). The difference between these subgroup effect sizes was statistically significant according to Fisher's z test ($p < .001$).

The meta-analysis provided little evidence that family interventions reliably ameliorated patients' anxiety ($d = .09, p = .29, k = 13$) or enhanced patients' satisfaction in their relationship with the family member included ($d = .37, p = .10, k = 5$; Table 3). The medium aggregate effect size for relationship satisfaction was mainly due to a large effect found in one of the five studies in this category (Bultz, Specca, Brasher, Geggie, & Page, 2000). Although the effect sizes for patient anxiety and relationship satisfaction were statistically nonsignificant, Q statistics indicated that there was a significant amount of variability in outcomes among the studies assessing these constructs. In the case of patient anxiety, we were able to examine whether effect sizes differed according to all potential moderating variables other than illness population. There was no evidence that family interventions reduced anxiety within any of these subsets of studies. In the case of relationship satisfaction, there was an adequate number of studies to stratify by intervention target and by family relationship. However, we found no evidence that interventions differentially influenced relationship satisfaction within these categories.

There was no evidence that family interventions had a reliable influence in terms of the physical disability of patients. Neither the aggregate effect size ($d = .04, p = .39, k = 9$) nor the Q test was statistically significant, and when follow-up analyses were stratified by the moderator variables, there were still no reliable effects. These findings indicate that family interventions do not reduce physical disability any better than usual medical care under many of the conditions examined in the randomized studies included in our meta-analysis.

In contrast, there was a marginally significant effect of family interventions on patient mortality ($d = .08, p = .06, k = 9$; Table 3). The studies responsible for this effect were heterogeneous, and further analyses indicated that, as predicted, family interventions did not reliably decrease mortality among dementia patients but

Table 2
Description of Studies Included ($N = 70$), by Moderator

Characteristic	%
Illness population	
Dementia due to ADRD	44.3
Heart disease	21.4
Frail older adults	15.7
Cancer	7.1
Chronic pain	4.3
Stroke	2.9
Rheumatoid arthritis	2.9
Traumatic brain injury	1.4
Family population	
Spouse only	24
Mixed family members	76
Targets of intervention	
Family member only	46
Patient and family member	54
Focus on relationship issues	
Yes	54
No	46

Note. ADRD = Alzheimer's disease or a related disorder.

Table 3
Meta-Analysis of Patient Outcomes With Moderator Findings

Outcome/moderator	<i>k</i>	<i>N</i>	Aggregate effect size <i>d</i>	95% CI	<i>p</i>	<i>Q</i>
Depressive symptomatology	27	4,364	.14	-.03, .31	.11	134.12***
Spouses only	13	3,176	.33*	.02, .64	.04	122.82***
Mixed family members	14	1,188	.02	-.10, .13	.75	11.06
Anxiety	13	3,285	.09	-.08, .26	.29	32.85***
Relationship satisfaction	5	534	.37	-.07, .80	.10	22.37***
Physical disability	21	1,707	.04	-.05, .14	.39	12.81
Mortality	9	4,030	.08††	-.00, .16	.06	10.00
Dementia	4	977	.02	-.11, .15	.74	2.22
Nondementia	5	3,053	.13*	.00, .26	.05	7.48
Spouses only	3	2,480	.01	-.07, .09	.83	0.98
Mixed family members	6	1,550	.14*	.02, .25	.02	5.92
Relationship focused	2	2,364	.00	-.08, .08	.99	0.00
Non-relationship focused	7	1,666	.13*	.03, .23	.01	6.04

Note. Data are presented for the analyses conducted for the five patient outcomes and for the subgroup analyses on each outcome that yielded a significant or marginally significant aggregate *d*. CI = confidence interval; Spouses/mixed family members = family interventions involving spouses only versus adult children or a mixed group of family members (e.g., spouses and adult children); Dementia/nondementia = family interventions focused on dementia versus other illnesses; Relationship focused/non-relationship focused = family interventions that did or did not address relationship issues between patient and family member.

†† *p* = .06. * *p* ≤ .05. *** *p* ≤ .001.

decreased mortality among individuals with other types of illnesses ($d = .13$, $p = .05$, $k = 5$), an effect with a confidence interval that included zero.⁴ The difference between subgroup effect sizes was statistically significant ($p < .001$). All five studies in the nondementia category focused on individuals with heart disease (i.e., post-MI, hypertension, and congestive heart failure patients), and follow-up time points ranged from 90 days to 5 years.

Contrary to prediction, family interventions reliably decreased mortality when they involved a mixed group of family members ($d = .14$, $p = .02$, $k = 6$). To get a sense of the practical importance of this finding, we translated it into a binomial effect size display (Rosenthal, 1991). Doing so revealed that whereas 53.5% of the patients who received a family intervention could expect to be living at the end of follow-up, only 46.5% of those in usual care could. Family interventions were not successful in decreasing patient mortality when they involved only spouses (see Table 3), and the difference between these subgroup effect sizes was statistically significant ($p < .001$).

The stratified analyses also showed that the likelihood of patient mortality was significantly reduced by family interventions that did *not* address relationship issues ($d = .13$, $p = .01$, $k = 7$). This beneficial effect, which indicates that 53% of patients were living at follow-up versus 47% of those in usual care, was not expected. Studies that included a focus on relationship issues did not reliably decrease mortality, and the difference between the subgroup effect sizes was statistically significant ($p < .001$). The nonsignificant *Q* statistic for these analyses suggests that effects were uniform across studies. The moderator findings for patient mortality should be interpreted cautiously because they were based on a very small number of studies (i.e., only three studies included spouses, and only two focused on relationship issues). In addition, in this particular group of studies there was much overlap between two of the moderators, type of family member included and relationship

focus; that is, six of the seven studies that did not address relationship issues focused on mixed family member groups.

Family Member Outcomes and Moderator Findings

Table 4 displays the meta-analytic results for the four family member outcomes examined. There was evidence that family interventions are successful in reducing depressive symptomatology among family members ($d = .10$, $p = .02$, $k = 41$). The *Q* statistic indicated that this large group of studies was heterogeneous in terms of outcomes.

Further analyses indicated significant effects for all four moderators. First, as predicted, family interventions reduced depressive symptoms in family members when they focused on illnesses other than dementia ($d = .17$, $p = .03$, $k = 18$), whereas family members of dementia patients did not show fewer postintervention depressive symptoms (see Table 4). Second, contrary to prediction, family interventions were beneficial for mixed groups of family members ($d = .10$, $p = .04$, $k = 29$) but not for groups consisting of only spouses. Third, interventions targeted only at the family member were successful in reducing family member depressive symptoms ($d = .15$, $p = .01$, $k = 24$), whereas interventions targeted at both patient and family member did not show this effect, contrary to prediction.

⁴ Excluding the study of Jones and West (1996; $N = 4,408$), the aggregate effect size for patient mortality was significant ($d = .11$, $p = .01$, 95% confidence interval = .02, .20), and the effect size for the nondementia subgroup was .21 ($p = .00$, 95% confidence interval = .08, .34). However, it is important to note that this large study did not obtain the same effect as smaller studies ($d = .00$). No other findings differed when this study and the study of Newcomer et al. (1999; $N = 2,042$) were excluded from the meta-analysis.

Table 4
Meta-Analysis of Family Member Outcomes With Moderator Findings

Outcome/moderator	<i>k</i>	<i>N</i>	Aggregate effect size <i>d</i>	95% CI	<i>p</i>	<i>Q</i>
Depressive symptomatology	41	7,850	.10*	.02, .18	.02	62.63**
Dementia	23	6,417	.06	-.04, .15	.25	30.14
Nondementia	18	1,433	.17*	.02, .32	.03	31.04*
Spouses only	12	1,025	.08	-.08, .24	.34	16.76
Mixed family members	29	6,825	.10*	.01, .20	.04	45.75*
Family member as target	24	5,855	.15**	.03, .27	.01	41.59**
Patient and family member as targets	17	1,995	.04	-.07, .15	.53	20.17
Relationship focused	22	1,754	.16**	.04, .27	.01	28.54
Non-relationship focused	19	6,096	.04	-.08, .15	.53	30.70*
Anxiety	14	898	.14†	-.01, .29	.07	15.71
Relationship focused	9	541	.21*	.00, .42	.05	11.86
Non-relationship focused	5	357	.02	-.19, .23	.84	2.02
Relationship satisfaction	6	461	-.08	-.27, .10	.38	2.40
Burden	40	7,951	.10***	.06, .15	.00	37.78
Dementia	25	6,604	.10***	.04, .16	.00	24.84
Nondementia	15	1,347	.20***	.09, .31	.00	9.19
Spouses only	7	651	.26***	.11, .42	.00	5.64
Mixed family members	33	7,300	.09***	.04, .14	.00	27.66
Family member as target	24	5,885	.17***	.08, .26	.00	26.80
Patient and family member as targets	16	2,066	.11***	.03, .20	.01	10.93
Relationship focused	18	1,826	.22***	.13, .32	.00	17.31
Non-relationship focused	22	6,125	.07***	.02, .12	.01	12.55

Note. Data are presented for the analyses conducted for the four family outcomes and for subgroup analyses on each outcome that yielded a significant, or marginally significant, aggregate *d*. CI = confidence interval. Dementia/nondementia = family interventions focused on dementia versus other illnesses; Spouses/mixed family members = family interventions involving spouses only versus adult children or a mixed group of family members (e.g., spouses and adult children); Family member as target/patient and family member as targets = family interventions that targeted only the family member versus both the patient and family member; Relationship focused/non-relationship focused = family interventions that did or did not address relationship issues between patient and family member.

† *p* = .07. * *p* ≤ .05. ** *p* ≤ .01. *** *p* ≤ .001.

Finally, family members became less depressed as a result of interventions that included a relationship focus, as predicted ($d = .16$, $p = .01$, $k = 22$), but did not show this benefit when relationship issues were not addressed. The differences between subgroup effect sizes were statistically significant ($p < .001$) in all cases other than the effects for spouses versus mixed family members. The significant subgroup effects were heterogeneous with the exception of the effect for relationship-focused studies. It should be noted that there was an extensive amount of overlap between moderators in this group of studies, in that 12 of the 18 studies involving patients without dementia included a relationship focus and 17 of the 24 studies targeting only the family member enrolled mixed family member groups.

There was no evidence that psychosocial interventions relieved anxiety among family members ($d = .14$, ns , $k = 14$), and this null effect was uniform across studies, as indicated by the nonsignificant heterogeneity statistic. Stratified analyses revealed significant effects for one of the moderators. Interventions that addressed relationship issues reduced family members' anxiety ($d = .21$, $p = .05$, $k = 9$), as predicted, whereas interventions that did not address these issues did not benefit family members in this regard. The difference between subgroup effect sizes was statistically significant ($p < .01$). The meta-analysis provided little evidence that family interventions reliably enhanced the satisfaction of family

members in their relationship with the patient ($d = -.08$, ns , $k = 6$), and this null effect was uniform across the six studies (Table 4). There was an adequate number of studies to stratify by illness population; however, we found no evidence that interventions differentially influenced relationship satisfaction within this category.

The strongest evidence for the efficacy of family interventions was found for the outcome of family burden ($d = .10$, $p = .00$, $k = 40$) and represented a small difference in scores on a posttreatment burden measure between groups that did and did not receive a family intervention. Although this aggregate effect size was small, it was uniform across studies, as indicated by the *Q* statistic. As shown in Table 4, stratified analyses revealed significant and homogeneous effects for all moderator subgroups. Family interventions reliably reduced the caregiving burden of family members of dementia patients ($d = .10$, $p = .00$, $k = 25$) as well as family members of other types of patients ($d = .20$, $p = .00$, $k = 15$). In addition, family interventions reliably reduced family burden in spousal groups ($d = .26$, $p = .00$, $k = 7$) and reduced family burden in mixed groups of family members ($d = .09$, $p = .00$, $k = 33$).

Family interventions that targeted both family member and patient were successful in reducing family burden ($d = .11$, $p = .01$, $k = 16$), but family interventions that targeted only the family

member were also successful ($d = .17, p = .00, k = 24$). Finally, family interventions reliably reduced family burden when their content addressed relationship issues between patients and family members ($d = .22, p = .00, k = 18$) but were also beneficial when they did not address these issues ($d = .07, p = .01, k = 22$). The magnitudes of the aggregate effects for the various subgroups were consistent with our predictions, with the exception of the effects found for intervention target. The differences between subgroup effect sizes were statistically significant in all cases ($p < .01$). In terms of moderator overlap, 19 of the 24 studies targeting only the family member enrolled mixed family member groups.

Discussion

Targeting family members of chronically ill individuals through psychosocial or behavioral strategies is a logical treatment approach that is gaining increased research attention. The main objective of this review was to take a broad first step toward evaluating the efficacy of psychosocial interventions involving a family member. We found that randomized, controlled studies comparing family interventions and usual medical care focused on those physical illnesses that are likely to have an especially potent effect on close family members because they require physical assistance with daily activities or supervision over extended periods of time (e.g., dementia or stroke), are life threatening (e.g., cancer), or are painful (e.g., chronic pain and rheumatoid arthritis). In addition, interventions were often focused on illnesses that have a trajectory strongly influenced by lifestyle changes (e.g., heart disease) and thus are likely to be strongly influenced by the attitudes and behaviors of family members.

Overall, our analyses showed the strongest evidence of efficacy in the case of family members. Interventions appeared to result in the patient's closest family member feeling less depressed and burdened; also, they reduced anxiety when they included a focus on relationship issues between the patient and family member. The depression effect translated into a small difference in scores on a posttreatment depression inventory between groups that did and did not receive a family intervention. Although this effect may seem small by clinical standards, it is roughly equal to the reduction in emotional distress seen in studies of psychological interventions with cardiac patients (Dusseldorp et al., 1999). The findings in regard to family members' depressive symptoms and burden may have important implications for physical health, in that improvements in these factors are likely to reduce the greater risk for mortality that has been demonstrated in family members (Schulz & Beach, 1999).

The findings of our moderator analyses focusing on depressive symptoms were consistent with the observation of other researchers that family members of individuals with dementia are faced with increasingly uncontrollable stressors over time, and it may be especially difficult to improve their mental health through psychosocial interventions in the face of such countervailing forces (e.g., Haley, Brown, & Levine, 1987; Sorensen et al., 2002). Interventions that focused on the relationship between patient and family member appeared to be most effective in reducing family member depression. Unexpectedly, interventions that targeted only family members and included mixed groups of such individuals were also effective. It is likely that these subsets of studies included interventions that were intensely focused on the emotional needs of the

family member. The results of our moderator analyses focusing on the outcome of burden showed that family interventions were beneficial across all subgroups, and the differences in subgroup effects were almost entirely consistent with our predictions. Our analyses showed no evidence that interventions enhanced the family member's satisfaction in his or her relationship with the patient.

Family interventions appeared to achieve reductions in patient depression only when they focused on spouses or couples. The greater proximity and intimacy of couples, as well as the emotional contagion from one spouse to the other (Bookwala & Schulz, 1996; Tower & Kasl, 1996), probably explain this predicted effect. This translates into a small-to-medium-sized difference in post-treatment depressive symptoms between patients who did and did not receive a family intervention. Reduced patient depressive symptomatology may have positive implications for physical health owing to the link between depression and the onset or exacerbation of diseases such as coronary artery disease, cancer, and diabetes (Glassman & Shapiro, 1998; Penninx et al., 1998; Schulz, Draper, & Rollman, 2002).

We also found evidence that family interventions enhanced patient survival but in ways that were only partially consistent with our hypotheses. As expected, reduced mortality was found among individuals coping with an illness other than dementia (in this group of studies, heart disease). Unexpectedly, family interventions reduced patient mortality if they included mixed groups of family members and did not address relationship issues. The focus on high-risk cardiac populations in these studies may explain the ability of interventions to affect mortality. We found no meta-analytic evidence that family interventions reduced patient anxiety, relationship satisfaction, or disability. Importantly, neither the significant nor the nonsignificant effects observed among patients were dependent on whether or not patients were included in the interventions.

The present meta-analytic findings raise the issue of potential social or behavioral mechanisms of family intervention effects. We found that family interventions reduced patients' depressive symptoms when they focused on both patients and their spouses. It is possible that spouses in these studies became more supportive or less critical of the patient (Manne, 1999; Martire, Stephens, Druley, & Wojno, 2002) and that spouses' participation in the intervention was considered by the patient to be an act of support. We also found that, under certain conditions, family interventions reduced the likelihood of mortality among individuals with heart disease, possibly through behavioral pathways such as improved diet, exercise, and general vigilance regarding health. Unfortunately, change in family support indicators or patient health behaviors is rarely assessed within interventions involving a family member.

In summary, family intervention appears to be a promising psychosocial approach that is not associated with negative outcomes for either the patient or the family member. The aggregate effects that we found for patients and family members were small in magnitude but consistent with those found with other psychosocial approaches to treating chronic illness. This intervention approach is a logical one because close family or friends represent the preferred source of support for many people, as well as the source of support exhibiting the most impact (Cutrona & Cole, 2000). Moreover, given the current health care trend in shifting

patient care to families, further development and evaluation of psychosocial interventions that incorporate family members may be useful from a broader, public health perspective.

Limitations of Our Review

It is important to acknowledge several limitations of this review. First, our meta-analysis did not include unpublished studies. Our focus was on published, peer-reviewed studies, because we thought that they would be most methodologically rigorous and thus yield the strongest conclusions in regard to treatment efficacy. Second, our analyses did not take into account that population effect sizes may be overestimated owing to a tendency for null findings to not appear in the published literature. We did not make statistical corrections for publication bias, because these corrections are often overly conservative when a small number of studies are aggregated, as was true for many of our outcomes. Because of these decisions, our meta-analytic findings should be considered preliminary and in need of corroboration. In addition, our inclusion of different illnesses, family populations, and types of psychosocial interventions resulted in a very heterogeneous group of studies, as would be expected, and necessitated that we constrain our review to mental and physical health indicators that were generalizable across illnesses.

Directions for Future Research

We recommend that researchers focusing on specific illness populations review the evidence regarding the feasibility and efficacy of interventions involving a family member in their area of research, particularly in terms of illness-specific patient outcomes such as cardiac symptoms, pain severity, cancer recurrence, and pulmonary function. Relatedly, there is much room for testing family interventions involving illnesses that have received little or no attention in this regard, such as painful conditions (e.g., chronic headaches and fibromyalgia), respiratory disorders (e.g., asthma and chronic obstructive pulmonary disease), and other illnesses that have been shown to affect and be affected by family members (e.g., diabetes and Crohn's disease). In addition, our literature search revealed that there is clearly a need for randomized, controlled studies comparing interventions involving family members and patient-focused interventions. In all future work in this area, it would be optimal to assess both patient and family member outcomes to determine efficacy from the perspective of the dyad (i.e., benefits for both individuals or neither individual or benefits for one individual with no change in the other). Because our focus was on intervention effects observed at the first follow-up, future research should be aimed at evaluating the long-term or lagged effects of interventions involving family members.

Mirroring the broader psychosocial intervention literature, we found that the majority of family intervention studies failed to describe how theory was used in the development of intervention materials and in the choice of measured outcomes. In studies in which a family member was incorporated into the patient's psychosocial intervention, it was also often unclear why the investigators chose to involve the family member. Rather, we found that it was most common for authors to simply cite one or two studies showing that family members affect the patient's functioning and adherence or are highly burdened by the patient's illness. If this

area of research is to advance, investigators should reference the particular conceptual models used in their choice of research design and intervention materials (e.g., marital or family systems frameworks or family caregiving models) and indicate how their findings inform such models.

We also found that it was uncommon for studies to report the extent to which patients or family members fully participated in a family intervention (e.g., number of sessions attended). This made it difficult to ascertain whether or not any null intervention effects were due to participants not receiving the intended information or materials (i.e., deficits in treatment receipt; see Lichstein, Riedel, & Grieve, 1994). Such information also speaks to the feasibility of family interventions and would be highly valuable to researchers in this area.

Because of the heterogeneity of the studies included in our meta-analysis, we took a relatively simplistic approach to selecting variables to examine as potential moderators of intervention effects. Additional moderators to examine in future research include gender and relationship satisfaction of the patient and family member, along with patient physical comorbidities and dependency, health of the family member, and perceived support of the patient and family member. These individual-level variables have not been examined as moderators in family intervention research to date. Patients and family members with specific characteristics may be appropriate for family interventions, whereas others may be better served by efforts to enhance patients' social support from sources outside of the family (Helgeson, Cohen, Schulz, & Yasko, 2000). Further attention to moderators in family intervention research would inform the development of the next generation of studies and also determine the appropriateness of conducting needs assessments among patients and family members.

As mentioned previously, another important objective of future research in this area is to identify the mechanisms by which specific types of family interventions may benefit the mental and physical health of patients and family members. Possible mechanisms for such health effects include improved self-efficacy, self-esteem, health behaviors, and relationship quality, as well as reduced burden for the family member and enhanced family support for the patient. In the future, it will be important for intervention studies to be designed to test such mediational effects (Kraemer et al., 2002).

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The Publications and Communications Board of the American Psychological Association announces the appointment of seven new editors for 6-year terms beginning in 2006. As of January 1, 2005, manuscripts should be directed as follows:

- *Experimental and Clinical Psychopharmacology* (www.apa.org/journals/pha.html), **Nancy K. Mello, PhD**, McLean Hospital, Massachusetts General Hospital, Harvard Medical School, 115 Mill Street, Belmont, MA 02478-9106.
- *Journal of Abnormal Psychology* (www.apa.org/journals/abn.html), **David Watson, PhD**, Department of Psychology, University of Iowa, Iowa City, IA 52242-1407.
- *Journal of Comparative Psychology* (www.apa.org/journals/com.html), **Gordon M. Burghardt, PhD**, Department of Psychology or Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville, TN 37996.
- *Journal of Counseling Psychology* (www.apa.org/journals/cou.html), **Brent S. Mallinckrodt, PhD**, Department of Educational, School, and Counseling Psychology, 16 Hill Hall, University of Missouri, Columbia, MO 65211.
- *Journal of Experimental Psychology: Human Perception and Performance* (www.apa.org/journals/xhp.html), **Glyn W. Humphreys, PhD**, Behavioural Brain Sciences Centre, School of Psychology, University of Birmingham, Edgbaston, Birmingham B15 2TT, United Kingdom.
- *Journal of Personality and Social Psychology: Attitudes and Social Cognition* section (www.apa.org/journals/psp.html), **Charles M. Judd, PhD**, Department of Psychology, University of Colorado, Boulder, CO 80309-0345.
- *Rehabilitation Psychology* (www.apa.org/journals/rep.html), **Timothy R. Elliott, PhD**, Department of Psychology, 415 Campbell Hall, 1300 University Boulevard, University of Alabama, Birmingham, AL 35294-1170.

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Manuscript submission patterns make the precise date of completion of the 2005 volumes uncertain. Current editors, Warren K. Bickel, PhD, Timothy B. Baker, PhD, Meredith J. West, PhD, Jo-Ida C. Hansen, PhD, David A. Rosenbaum, PhD, Patricia G. Devine, PhD, and Bruce Caplan, PhD, respectively, will receive and consider manuscripts through December 31, 2004. Should 2005 volumes be completed before that date, manuscripts will be redirected to the new editors for consideration in 2006 volumes.