

A Systematic Review of the Effectiveness of Community-Based Mental Health Outreach Services for Older Adults

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Objectives: Psychiatric outreach services that provide mental health assessment and treatment to older adults in their homes or communities are widely promoted as improving access and outcomes for older adults. However, a systematic review of the efficacy of these services has not been done. This review evaluates the evidence base for the effectiveness of outreach services for older adults with mental illness in noninstitutional community settings. End points of interest include the ability of the outreach program to increase access to mental health services and improve psychiatric outcomes. **Methods:** MEDLINE, CINAHL, PsycINFO, and Web-of-Science databases were searched for articles in English that were indexed through May 2004. Studies were included if they evaluated face-to-face psychiatric services provided to adults aged 65 and older with mental illness and if they were randomized controlled trials, quasi-experimental outcome studies, uncontrolled cohort studies, or comparisons of two or more interventions. Articles were excluded that evaluated interventions that were provided in institutional settings or that focused on persons with dementia or their caregivers. **Results:** Fourteen studies matched all the inclusion criteria. Two studies (one controlled prospective study and one study that used a comparison group) found support for the use of gatekeepers—nontraditional referral sources—in identifying socially isolated older adults with mental illness. Twelve studies (five randomized controlled trials, one quasi-experimental study, and six uncontrolled cohort studies) found that home and community-based treatment of psychiatric symptoms were associated with improved or maintained psychiatric status. All randomized controlled trials reported improved depressive symptoms, and one reported improved overall psychiatric symptoms. **Conclusions:** Limited data supported the effectiveness of outreach services in identifying isolated older adults with mental illness. A more substantial evidence base indicated that home-based mental health treatment is effective in improving psychiatric symptoms. Studies are needed that apply more rigorous methods evaluating the efficacy of case identification models and subsequent treatment for older persons with a variety of psychiatric diagnoses. (*Psychiatric Services* 55:1237–1249, 2004)

Older adults have historically underused mental health services. Low service use has been attributed to both personal and system barriers. To overcome these barriers and increase the use of mental health services, outreach models of care have been developed that provide services in settings where older adults reside or spend a significant amount of time. Outreach services have been nationally promoted as a means of improving access and mental health outcomes, yet their evaluation in older adult populations has been limited.

In less than ten years, the first of the baby-boom population will reach the age of 65 years (1). The aging of this population, especially the aging of persons with mental illness, is predicted to challenge the delivery of health care in an already impaired system. One in five older adults has a mental illness (2). The most prevalent conditions include anxiety and depressive disorders (3). Psychotic illnesses and substance abuse are less common (3). Projections indicate that the number of older adults with mental illness will more than double, from seven million in the year 2000 to 15 million by the year 2030 (2).

Untreated mental illness among older adults has a significant impact on health, functioning, and health service use and costs. For instance, late-life mental illness has been associated with impaired independent and community-based functioning, impaired cognition, poor medical and health outcomes, high medical comorbidity, increased disability and

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mortality, and compromised quality of life (4,5). Mental illness among older adults has also been correlated with increased use of health care, increased placement in nursing homes, increased burden on medical care providers, and higher annual health care costs (6–10).

In light of the significant burden of mental illness on older adults and on the health care system, the past 15 years have seen a dramatic increase in the knowledge of appropriate treatments for geriatric mental illness. A large body of data suggests that mental health interventions are successful in improving psychiatric outcomes of older adults with depression and dementia (11). A limited number of studies support the efficacy of interventions for late-life substance abuse, anxiety, and schizophrenia (11,12).

Despite the high prevalence of late-life mental illness and evidence for the efficacy of several pharmacologic and psychotherapeutic interventions, mental illness is underrecognized and undertreated in this population. It is estimated that approximately half of older adults with a recognized mental disorder do not receive mental health services (13). Older adults are unlikely to use traditional clinic-based mental health services for a variety of reasons, including physical frailty, transportation difficulties, isolation, and stigma (14).

Poor access to mental health care has prompted national policy leaders to consider novel strategies for providing mental health services to older adults. Recent reports from the Administration on Aging (14), the Surgeon General (4), and the older adult subcommittee of the President's New Freedom Commission on Mental Health (15) have promoted the provision of outreach services to older adults in noninstitutional community-based settings as a potential mechanism for increasing access to mental health care. These reports have described outreach services as the detection and treatment of mental health problems in settings where older adults live, spend time, or seek services. The primary elements of outreach services include case finding, assessment, referral, treatment, and consultation. For instance, out-

reach programs may offer early intervention, facilitate access to preventive health care services, provide evaluation services, refer individuals to community treatment or supportive services, and provide services designed to improve community tenure. Despite the national promotion of outreach services, a systematic review of their effectiveness has not been done. A systematic evaluation of this service delivery approach has implications for guiding national health care policy.

This review evaluates the evidence base surrounding the provision of psychiatric outreach to older adults in noninstitutional settings, as identified by models of case identification and

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*Much
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mental health treatment. Specifically, this review addresses whether geriatric mental health outreach services are effective in improving access to mental health care through the identification of isolated older adults and in improving mental health symptoms or outcomes?

Methods

To identify relevant articles for this review, MEDLINE, PsycINFO, CINAHL, and Web-of-Science databases were searched within three topic areas for English language articles that were indexed through May 2004: community outreach services (keywords: "outreach," "gatekeeper," or "consultation and referral"), mental

illness (keywords: "mental," "depress**", and "psych**"), and older adults (keywords: "geriatric," "late-life," or "elderly"). Additional articles were identified through bibliographic review and MEDLINE and Web-of-Science-related records searches.

Studies were included that evaluated face-to-face psychiatric outreach services provided to adults aged 65 and older with mental illness. Services included case-finding and identification programs as well as treatment that was provided in community-based noninstitutional settings, such as senior centers, senior residential care settings, and home-based settings. Studies were eligible if they were randomized controlled trials, quasi-experimental outcome studies, uncontrolled cohort studies, or comparisons of two or more interventions.

Studies were excluded if they evaluated services that were provided in institutional settings—for example, nursing homes or hospitals. Because the goal of this review was to determine the effectiveness of outreach services for primary psychiatric disorders, interventions that explicitly focused on persons with dementia or their caregivers were excluded. Finally, we excluded articles that had at least one author in common and only minor differences with respect to study samples and efficacy results.

Selection of trials

A total of 145 articles were identified through the literature search, and 17 articles were identified through bibliographic and related records searches. A total of 104 articles were rejected because of sample selection (that is, a nongeriatric population), provision in an institutional setting, or lack of face-to-face contact. Forty additional articles were excluded on the basis of the quality of data presented: 36 contained only model descriptions or descriptive data, and four described small case studies. Among the 18 remaining reports, 14 fulfilled all inclusion criteria and four were excluded because they were published in duplicate. Among the 14 studies in our final sample, five studies were randomized controlled trials (16–22), one used a quasi-experimental design (23), one

Table 1

Description of studies that evaluated the effectiveness of referral models for identifying older adults in noninstitutional settings who are aged 65 and older and have mental illness

Study	Study type	Model	N	Setting	Diagnoses	Mean±SD age (years)	% female	Demographic characteristics
Florio et al. (31), 1998; Florio et al. (32), 1996; Raschko (33), 1997	Observational comparison study	Referral by gatekeeper versus referral by medical provider versus referral by others	777	Home and community	Emotional disturbances, 63 percent; cognitive impairment, 60 percent	75.6±11.8	68	31 percent married; 50 percent widowed; 58 percent lived alone
Florio et al. (24), 1998	Controlled pre-post study	Referral by gatekeeper versus referral by medical provider or another source	88	Home and community	Dementia, 53 percent; depression, 16 percent; bipolar disorder, 5 percent	79±10.5	68	36 percent married; 41 percent widowed

used a controlled prospective cohort (24), four used an uncontrolled prospective cohort (25–28), two used an uncontrolled retrospective cohort (29,30), and one provided outcome data on intervention and control cohorts (31–33).

Data extraction and analysis

Descriptive characteristics and outcome data were abstracted from the 14 reports that met all our inclusion criteria by using a standard data collection form. Data included study type, model description, inclusion and exclusion criteria, sample characteristics, duration of the study, completion rate of the study, whether the intervention and outcome assessments were blind, study measures and outcomes, and strengths and weaknesses. Primary outcomes of interest included use of mental health services and improvement in psychiatric symptoms. Statistical aggregation of data was not feasible because of the lack of similarity among studies with respect to study design, inclusion criteria, sampling, and outcome measures.

Results

Effectiveness of case identification strategies

Studies evaluating the effectiveness of case identification models are summarized in Table 1. The studies highlight the gatekeeper model (nontraditional community referral sources) in comparison with traditional referral sources (medical providers, family

members, informal caregivers, or other concerned persons). The gatekeeper model recruits community service personnel who have frequent contact with older persons, such as meter readers and utility workers, to identify and refer individuals for assessment. Assessment in both referral models focuses on identifying unmet needs and comprehensively evaluating physical health, mental health, and psychosocial needs. On the basis of identified needs, treatment recommendations are developed in concert with a multidisciplinary team.

Two evaluations that compared referrals by gatekeepers with those by traditional sources were identified, including one observational comparison study (31–33) and one controlled prospective study (24). Older adults evaluated in these studies had similar ages, gender distributions, and marital status. Diagnoses varied across studies. Often the studies had more individuals with a diagnosis of dementia or depression, as opposed to other diagnoses.

As shown in Table 2, gatekeepers identified approximately 40 percent of older persons referred to elder services. Differences were found in characteristics between individuals referred by gatekeepers and those referred by a medical provider or another traditional source. Older adults referred by gatekeepers were significantly more likely to live alone and were more often widowed or divorced. Moreover, individuals referred by gatekeepers were signifi-

cantly more likely to be affected by economic and social isolation. These findings suggest that the gatekeeper approach reaches individuals who are less likely to gain access to services through conventional referral approaches. At the time of referral, individuals referred by gatekeepers were significantly less likely than individuals referred through traditional sources to use services. However, individuals from these two groups had similar service needs, which indicates that those referred by gatekeepers had a larger gap between services needed and services received (31–33). At the one-year follow-up, older persons referred by gatekeepers had no difference in service use or out-of-home placements compared with individuals referred by traditional sources. The authors concluded that older adults referred by gatekeepers do not place overly high service demands on the health care system (24).

Effectiveness in improving psychiatric symptoms and outcomes

Most evaluations of community-based mental health outreach models examine the impact of these services on symptoms and community tenure. These models generally employ a multidisciplinary team of providers to develop a care management protocol, which is implemented within a residential setting. Treatment recommendations vary significantly among individuals and are implemented through a variety of sources. Some

Table 2

Outcomes reported from studies that evaluated the effectiveness of referral models for identifying older adults in noninstitutional settings who are aged 65 and older and have mental illness

Study	N of participants		Follow-up		Outcomes and results	Limitations
	Intervention	Control	Duration	Completion rate		
Florio et al. (31), 1998; Florio et al. (32), 1996; Raschko (33), 1997	315 were referred by a gatekeeper	217 were referred by a medical provider and 245 were referred by another source	na	na	Gatekeepers made 41 percent of the referrals to elder services. Persons who were referred by gatekeepers tended to be younger and to have significantly more economic and social isolation, less physical impairment, less impairment of activities of daily living, and less social support. Persons who were referred by gatekeepers were significantly less likely to have a family physician. They were also significantly more likely to be single (80 percent, compared with 62 percent of those who were referred by a medical provider and 63 percent of those who were referred by another source), female (73 percent, compared with 62 percent of those who were referred by a medical provider and 67 percent of those who were referred by another source), and to live alone (74 percent, compared with 49 percent of those who were referred by a medical provider and 46 percent of those who were referred by another source). Significantly more persons who were referred by gatekeepers did not receive needed services (51 percent, compared with 26 percent of those who were referred by a medical provider and 37 percent of those who were referred by another source).	No symptom outcomes were reported.
Florio et al. (24), 1998	40 were referred by a gatekeeper	48 were referred by a medical provider or another source	1 year	100 percent	Older adults who were referred by a gatekeeper, a medical provider, or another source had similar rates of service use and out-of-home placements. Significantly more persons who were referred by gatekeepers lived alone (70 percent, compared with 35 percent of those who were referred by a medical provider or another source), and fewer were married (20 percent, compared with 49 percent who were referred by a medical provider or another source).	The study reported outcome data that were obtained by the clinicians who provided the interventions. The analysis did not adjust for severity or for baseline differences. The model had been in place for many years.

outreach teams employ a model consisting of assessment and referral, whereas others directly implement treatment recommendations by clinicians on the assessment team.

The effectiveness of outreach services in improving psychiatric symptoms and community tenure are reported in 12 studies, including five randomized controlled trials (16–22), one quasi-experimental study (23),

and six uncontrolled cohort studies (25–30), as shown in Table 3. Older adults participating in these studies were predominantly female and tended to be between 75 and 85 years old. Three studies focused exclusively on older persons with depression, whereas the other nine studies included individuals with a range of diagnoses. All provided services in the older adults' place of residence.

Four randomized controlled trials examined the effectiveness of implementing a care management protocol that was developed by a multidisciplinary team, although providers differed across studies. Rabins and colleagues (17) and Waterreus and colleagues (20) employed nurses, Banerjee and colleagues (19) employed a care manager, and Llewellyn-Jones and colleagues (18) employed physi-

Table 3

Description of studies that evaluated home and community-based treatment for older adults in noninstitutional settings who are aged 65 and older and have mental illness

Study	Model	N	Setting	Diagnoses	Age (years)	% female	Demographic characteristics
Randomized controlled trial ^a							
Ciechanowski et al. (16), 2004	Problem-solving therapy delivered by social workers under a psychiatrist's supervision; intervention delivered in coordination with primary care providers	138	Senior public housing	Dysthymia, 49 percent; minor depression, 51 percent	Mean±SD, 73±8.5	79	11 percent were married or lived with partner; 72 percent lived alone; 58 percent were white; 36 percent were African American
Rabins et al. (17), 2000	Multidisciplinary development of care protocol; nurse-based outreach	298	Senior public housing	Variable	Mean, 75.4±8.5	85 in the intervention group; 70 in the control group	8 percent were married; 50 percent were widowed; 93 percent lived alone
Llewellyn-Jones et al. (18), 1999	Multidisciplinary treatment delivered primarily by the general practitioner	220	Residential facility	Depression	Mean, 84.3±5.8	85	10 percent were married; 71 percent were widowed; 66 percent lived in a hostel
Banerjee et al. (19), 1996	Psychogeriatric team treatment for elderly who receive home care	66	Home	Depression	Mean, 80.7±6.8	83	16 percent were married; 64 percent were widowed; 78 percent lived alone
Waterreus et al. (20), 1994; Blanchard et al. (21), 1995	Nurse-based case management; implementation of a care plan that was created by a hospital-based psychogeriatric team	96	Home	Minor depression, 58 percent; major depression, 23 percent; dementia, 6 percent	Mean, 76±6.8	85	22 percent were married; 63 percent were widowed
Quasi-experimental study ^a							
Cuijpers et al. (23), 2001	Training for caregivers and other employees of a residential home; information meeting for residents and relatives; group interventions offered	424	Residential facility	All residents; targeted on depressive symptoms	24 percent were aged 71 to 80, 58 percent were aged 81 to 90, and 16 percent were older than 90	79	11 percent were married; 74 percent were widowed; 34 percent lived in a residential home for 1 to 3 years; 38 percent lived in a residential home for more than 3 years
Uncontrolled cohort, pre-post study							
Prospective							
Kohn et al. (25), 2002	Multidisciplinary outreach team; implemented by a social worker	93	Home: study focused on homebound older adults	Affective disorder, 33 percent; dementia plus depression, 18 percent; other dementia, 33 percent	Mean, 79.7±7	76	19 percent were married; 56 percent were widowed; 58 percent lived alone; 66 percent were white; 18 percent were African American; 14 percent were Hispanic
Seidel et al. (26), 1992	Multidisciplinary outreach team; management plan implemented by a case manager	100	Residence: 27 percent lived in their own home, 40 percent lived	Major depression, 14 percent; Alzheimer's disease, 29 percent; other dementia,	Mean, 79.2±7.6	63	31 percent were married; 49 percent were widowed

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Table 3*Continued from previous page*

Study	Model	N	Setting	Diagnoses	Age (years)	% female	Demographic characteristics
Seidel et al. (cont.)			in a nursing home, and 33 percent lived in a hostel or rest home	14 percent; schizophrenia or delusional disorder, 19 percent			
Wasson et al. (27), 1984	Multidisciplinary geropsychiatric outreach team; home evaluation and linkage to medical, mental health, and social services	83	Home	Variable	Mean, 77; range, 60 to 94	71	63 percent were white; 35 percent were African American; 80 percent were single
Reifler et al. (28), 1982	Multidisciplinary outreach team; home evaluation and treatment	100	Home	Depression, 13 percent; dementia, 21 percent; alcohol abuse, 9 percent; schizophrenia, 4 percent	Mean, 75; 25 percent were aged 60 to 69, 36 percent were aged 70 to 79, and 28 percent were aged 80 to 89	69	82 percent were white; 5 percent were black; 18 percent were married; 40 percent were widowed
Retrospective Brown et al. (29), 1996	Multidisciplinary outreach team; case finding followed by home assessment and community support	95	Home	Affective disorder, 42 percent; organic mental disorder, 40 percent; schizophrenia, 12 percent; another diagnosis, 7 percent	36 percent were aged 65 to 74, and 48 percent were aged 75 to 84	71	34 percent lived with their spouse; 44 percent lived alone
Buckwalter et al. (30), 1991	Multidisciplinary rural elderly outreach program; case finding followed by assessment, referral, treatment, follow-up, and coordination	30	Home and community	Depression, 15 percent; depression was the most common diagnosis	35 percent were aged 65 to 74, and 36 percent were aged 75 to 84	71	35 percent were married; 49 percent were widowed; 43 percent lived alone

^a The comparison group consisted of persons who received usual care.

cians and residential staff to implement the intervention. The fifth randomized controlled trial evaluated the effectiveness of problem-solving therapy that was provided by social workers in senior public housing under the supervision of a psychiatrist (16). As shown in Table 4, relative to usual care, all interventions were associated with significant improvement in depressive symptoms. Of note, Rabins and colleagues (17) also found that outreach services were associated with a decrease in overall symptom severity, as measured by the total Brief Psychiatric Rating Scale score, for individuals with a va-

riety of psychiatric disorders.

A recent quasi-experimental study evaluated a multifaceted education and support program that was administered in a residential care setting and compared the results with those of a usual care program (23) (Table 3). The target population included older persons who were incapable of living independently because of physical, psychiatric, or psychosocial constraints yet did not require extensive nursing home care. The intervention included training for caregivers and other employees of the residential home, informational meetings for residents and their relatives, and sup-

port groups and discussion and feedback sessions for care providers. As shown in Table 4, results indicated that an intervention that provides education, support, and feedback to residential care providers can reduce depressive symptoms and maintain health-related quality of life for older persons.

Findings from the small group of longitudinal cohort studies suggest that multidisciplinary outreach teams are associated with reduced psychiatric symptoms relative to baseline levels. These studies provided in-home assessment, followed by interventions that included either referral

Table 4

Outcomes reported from studies that evaluated home and community-based treatment for older adults in noninstitutional settings who are aged 65 and older and have mental illness

Study	N of participants		Follow-up		Outcomes and results	Limitations
	Intervention	Control	Duration	Completion rate		
Randomized controlled trials ^a						
Ciechanowski et al. (16), 2004	72	66	12 months	93 percent in the intervention group and 91 percent in the control group	Intervention group had more improvement in depressive symptoms as measured by the Hopkins Symptom Checklist. Possible scores of the checklist range from 0 to 4, with lower scores indicating better functioning. The intervention group had a mean±SD score of 1.3±.5 before the intervention and a mean score of .8±.6 after the intervention. The control group had a mean score of 1.2±.5 before the intervention and a mean score of 1±.5 after the intervention. Forty-three percent of the intervention group showed at least a 50 percent reduction in depression symptoms, compared with 15 percent of the control group. Thirty-six percent of the intervention group had remission of depressive symptoms compared with 12 percent of the control group. The intervention group had more improvement in functional and emotional well-being as measured by the Functional Assessment of Cancer Therapy Scale. Possible scores of the scale range from 0 to 4, with lower scores indicating better functioning. Mean functional change scores were .52 (confidence interval [CI]=.29-.74) for the intervention group and .09 (CI=-.14-.33) for the control group. Mean emotional change scores were .33 (CI=.14-.52) for the intervention group and .11 (CI=-.09-.31) for the control group. No difference was found between the groups in service use or social and physical well-being.	The intervention group had a greater proportion of dysthymia than the control group.
Rabins et al. (17), 2000	131; 393 for weighted sample size	167; 488 for weighted sample size	26 months	50 percent in the intervention group and 58 percent in the control group	The intervention group had more improvement in psychiatric symptoms as measured by the Brief Psychiatric Rating Scale. Possible scores on the scale range from 1 to 140, with lower scores indicating better functioning. The intervention group had a mean score of 29.7±8.4 before the intervention and a mean score of 27.4±7.2 after the intervention. The control group had a mean score of 30.1±11.2 before the intervention and a mean score of 33.9±13.6 after the intervention. The intervention group also had more improvement in depressive symptoms as measured by the Montgomery Asberg Depression Rating Scale. Possible scores on the scale range from 1 to 60, with lower scores indicating better functioning. The intervention group had a mean score of 13.7±9.5 before the intervention and a mean score of 9.1±6.2 after the intervention. The control group had a mean score of 11.7±5.8 before the intervention and a mean score of 15.2±9.5 after the intervention. No difference was found between the two groups in undesirable moves,	No single standardized treatment was given. Individuals were randomized into groups after identification of mental illness. Thirty-three percent dropped out of the study because of death or a move; an additional 13 percent refused to complete the study.

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Table 4

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Study	N of participants		Follow-up		Outcomes and results	Limitations
	Intervention	Control	Duration	Completion rate		
Rabins et al. (cont.)					including evictions or moves to a nursing home or to a board-and-care home. (Analyses were based on weighted numbers of psychiatric cases: 62 cases in the intervention group and 69 cases in the control group.)	
Llewellyn-Jones et al. (18), 1999	109	111	9.5 months	79 percent in the intervention group and 75 percent in the control group	The intervention group showed greater improvement in depression symptoms than the control group at follow-up. Depression was measured by the Geriatric Depression Scale; possible scores range from 1 to 30, with lower scores indicating better functioning. Before the intervention, 44 percent of the intervention group had scores of 14 or higher, 56 percent had scores ranging from 10 to 13, and none had scores of 9 or lower. After the intervention, 34 percent of the intervention group had scores of 14 or higher, 32.6 percent had scores ranging from 10 to 13, and 33.7 percent had scores of 9 or lower. Before the intervention, 33 percent of the control group had scores of 14 or higher, 68 percent had scores ranging from 10 to 13, and none had scores of 9 or lower. After the intervention, 45 percent of the control group had scores of 14 or higher, 31 percent had scores ranging from 10 to 13, and 24 percent had scores of 9 or lower. Factors associated with lower Geriatric Depression Scale scores included low baseline Geriatric Depression Scale scores, high baseline basic functioning, low neuroticism, younger age, and intervention participation.	The control and intervention periods were not concurrent. The study was conducted in only 1 large residential facility. At follow-up 75 percent of participants completed the Geriatric Depression scale, but only 58 percent completed all measures.
Banerjee et al. (19), 1996	33	36	6 months	88 percent in the intervention group and 89 percent in the control group	The intervention group tended to recover from depression (58 percent compared with 25 percent in the control group). The intervention group also had a greater change in the level of depression, as measured by the mean change in score from baseline to follow-up on the Montgomery Asberg Depression Rating Scale. Possible scores range from 1 to 60, with lower scores indicating better functioning. The intervention group showed a mean 18.3±6.5 point reduction; the control group showed a mean 11.6±6.4 point reduction.	There was a possible nonresponse bias. Results may not generalize to non-home care populations. It was difficult to tell which component of the intervention caused the effect.
Waterreus et al. (20), 1994; Blanchard (21), 1995	47	49	3 months	92 percent in the intervention group and 80 percent in the control group	The intervention group showed greater improvement in depression symptoms than the control group as measured by the Short Comprehensive Assessment and Referral Evaluation. Possible scores range from 1 to 18, with lower scores indicating better functioning. The intervention group had a mean score of 8.5±2.5 before the intervention and a mean score of 5.9±2.6 after the intervention. The control group had a mean score of 8.4±2.3 before the intervention and a mean score of 7.2±3.3 after the intervention. No differ-	There was a lag time between initial assessment and the start of the intervention. Analyses did not control for baseline factors.

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Table 4

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Study	N of participants		Follow-up		Outcomes and results	Limitations
	Intervention	Control	Duration	Completion rate		
Waterreus et al. (cont.)					ence was found between the intervention and control group in the number of persons meeting criteria for probable pervasive depression.	
Blanchard et al. (22), 1999 ^b	47	49	6 to 14.5 months	75 percent in the intervention group and 59 percent in the control group	In an extension of the previous study (20, 21) both the control and intervention groups received care management protocols provided by the general physician. Individuals with long-term depression did better in the intervention group than the control group as measured by the Short Comprehensive Assessment and Referral Evaluation. Possible scores range from 1 to 18, with lower scores indicating better functioning. The intervention group had a mean score of 9.3±2.7 before the intervention and 6.3±3.5 after the intervention. The control group had a mean score of 9.1±2.7 before the intervention and 9.2±3.4 after the intervention. This finding was the only difference that was found between the control and intervention groups.	The study had a small sample, low power, variable follow-up length, and limited implementation of social and antidepressant treatment. In addition, most analyses showed no difference between the two groups.
Quasi-experimental study ^a Cuijpers et al. (23), 2001	213	211	1 year	59 percent	The intervention group had greater improvement in depression as measured by the Geriatric Depression Scale. Possible scores range from 1 to 30, with lower scores indicating better functioning. The intervention group had a mean score of 8.1±5.1 before the intervention and 7.6±5.2 after the intervention. The control group had a mean score of 9±5.4 before the intervention and 9.3±4.2 after the intervention. The intervention group also had greater improvement in health-related quality of life as measured by the 20-Item Short-Form Health Survey. Possible scores range from 1 to 100, with higher scores indicating better functioning. The intervention group had a mean score of 30.4±38.8 before the intervention and 29.5±34.9 after the intervention. The control group had a mean score of 37.9±36 before the intervention and 21.9±31.5 after the intervention.	The study was not randomized, there was a high dropout rate, and it was unknown which participants received the group therapy component. Also, the change in the Geriatric Depression Scale score was not clinically significant.
Uncontrolled cohort, pre-post study Prospective Kohn et al. (25), 2002	93	na	Variable	100 percent	Participants had improvement in global functioning as measured by the Global Assessment of Functioning Scale. Possible scores range from 1 to 100, with higher scores indicating better functioning. Participants had a mean score of 40.5±18.6 before the intervention and 48.2±22.3 after the intervention. Participants received more hours per week of home-care services after the intervention (34.6	The study did not have a control group and had a limited analysis of potential outcomes. The analyses were confounded by unmeasured vari-

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Table 4

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Study	N of participants		Follow-up		Outcomes and results	Limitations
	Intervention	Control	Duration	Completion rate		
Kohn et al. (cont.)					hours compared with 51.6 hours), but they did not differ in their degree of being homebound.	ables, and there were potential systematic differences between participants who remained in the program.
Seidel et al. (26), 1992	100	na	3 months	86 percent	Participants had improvement in behavioral disturbances as measured on a scale of 1 to 4, with higher scores indicating better functioning. Participants had a mean score of $2 \pm .8$ before the intervention and $3 \pm .9$ after the intervention. Eighty-seven percent of referring agents and 80 percent of caregivers perceived the service as helpful or very helpful.	The study did not have a control group and did not evaluate behavioral disturbances among individuals residing in their own home because behavioral disturbances were not a significant problem for that group. The analyses did not adjust for severity of psychiatric symptoms. Cell sizes were too small to enable accurate detection of changes within diagnostic groups.
Wasson et al. (27), 1984	83	na	3 months	80 percent	Direct psychiatric services were recommended for 77 percent of the participants. Fifty-one percent improved at follow-up (decreased symptoms, increased well-being, and reduced tension between the participant and his or her significant other).	The study had selection biases; for example, it excluded hospitalized participants from follow-up. Also, the study did not have independent raters, did not have standardized measures, examined few outcome measures, and did not have a control group.
Reifler et al. (28), 1982	100	na	3 to 4 years	74 percent	Limited data were reported. Most participants maintained independence: 69 percent of participants owned their own home before the intervention, and 62 percent owned their own home after the intervention. Only 21 percent of participants used community services.	The study did not have a control group and did not have statistical evaluation or standardized measures. The study reported outcome data that were obtained by the clinicians who provided the interventions. Investigators attempted to contact 400 persons to identify the 100 persons who were included in the study.
Retrospective Brown et al. (29), 1996	95	na	6, 12, and 18 months	100 percent	At 12 and 18 months, respectively, 13 percent and 19 percent had died, 75 percent and 65 percent remained in the community, and 13 percent and 14 percent lived in long-term-care facilities.	The study did not have a control group. Participants who were included in the caseload were more likely than those who were referred but not admitted to the caseload to have affective disorders or schizophrenia. The study was unable to link outcomes to intervention. Discharge locations were unknown. No functional or psychiatric outcomes were given.

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Table 4*Continued from previous page*

Study	N of participants		Follow-up		Outcomes and results	Limitations
	Intervention	Control	Duration	Completion rate		
Buckwalter et al. (30), 1991	30	na	4 months	100 percent	Improved psychiatric symptoms as measured by the Geriatric Depression Scale, the Short Portable Mental Status Questionnaire, and the Short Psychiatric Evaluation Schedule.	No data or statistics were provided. The study had a small sample size and no control group. The study was potentially biased because no description was given of the selection process for the 30 clients in the study. Also, sensitivity of the measures was questionable.

^a The comparison group consisted of persons who received usual care.

^b The study provides longer-term follow-up of the participants in the study by Waterreus and colleagues (20). In the study by Blanchard and colleagues (22) the investigators provided general physicians with care management protocols for all participants, and the nurse case management intervention was discontinued.

and linkage to outpatient treatment or to in-home psychiatric care. However, the specific interventions and outcomes differed, limiting cross-study comparisons or pooling of results. These multidisciplinary geriatric mental health outreach interventions were associated with improved global functioning (25), reduced psychiatric symptoms (27,30), and fewer behavioral disturbances (26) relative to baseline measurements of symptoms and functioning (Table 4). In addition, these interventions were associated with maintained independence (28,29) and were perceived as helpful to caregivers and referring agents (26).

Discussion

This systematic review of randomized controlled trials, uncontrolled cohort studies, and quasi-experimental outcome studies provides qualified support for the effectiveness of multidisciplinary psychogeriatric outreach services. Nonrandomized comparison studies of the gatekeeper model suggest that unconventional case finding approaches that are linked with referral to mental health providers may improve access for a group of older adults who are isolated and have a variety of diagnoses. Similarly, findings from a limited body of literature suggest that multidisciplinary care provided in an older person's home is effective in improving psychiatric out-

comes. However, the data supporting these assertions are of variable quality. As such, any conclusions drawn should be tempered by the methodologic limitations of these data.

General conclusions drawn from pooled data in the form of meta-analyses or other cross-study evaluations are not possible because of the lack of comparability in study interventions, designs, and outcome measures. Our study found few randomized controlled trials, and in only one of the nine nonrandomized trials did the analysis adjust for severity of psychiatric symptoms (23). Furthermore, some studies reported outcome data that were obtained by the clinicians who provided the interventions. Among the 14 studies that we found, nine employed independent outcome raters (16–20,23,25,26,30), two documented interrater reliability (18,26), and seven used an intent-to-treat analysis (16–20,23,29). In general, uncontrolled cohort studies failed to qualify their conclusions by discussing the possibility that symptom improvement could represent regression to the mean. Finally, only two studies included information on the cost of the intervention (16,30), limiting the capacity of policy makers or providers to assess practical considerations associated with implementing and sustaining these treatment models in routine clinical settings.

Studies also varied with respect to

case identification methods, type and intensity of treatment provided, composition of the treatment team, duration of follow-up, use of standardized measures, and participants' characteristics. Two of the 12 outcome studies used gatekeepers to make patient referrals (17,30), two used traditional referral mechanisms (25,28), and most screened participants from home and residential care settings or senior service agencies (16,18,20,21, 23,27). Follow-up periods ranged from three months to three to four years. Outcomes varied across studies, and many studies failed to use standardized assessment measures (24,26–29,31). Finally, participants' characteristics also differed across studies. Although most studies had large proportions of female participants aged 70 to 80 years, ethnicity and diagnoses differed. Several studies targeted individuals with depression, whereas others included a range of diagnoses, most commonly depression and dementia. This variability complicates interpretation of the data and prohibits the calculation of an overall effect size. Moreover, variability in participants' characteristics may limit generalizability to younger male populations or to older individuals with psychotic, anxious, or other symptom constellations.

To our knowledge, this is the first systematic review of the evidence that supports geriatric mental health

outreach service models using standardized inclusion and evaluation criteria. However, this review has several important limitations. First, the search strategy was limited to articles that were published in English. Second, the lack of a common taxonomy for characterizing types of mental health service models and associated outcome studies presents the possibility that this review failed to identify all relevant studies. Furthermore, this review process did not evaluate abstracts from scientific meetings, nor did it attempt to contact investigators in the field to identify unpublished studies. In addition, publication bias must be considered—studies with negative findings may not have reached dissemination venues. These factors may result in the underidentification of relevant evaluations of the outreach model and may have biased this review in favor of outreach services.

This systematic review applied a standardized approach to evaluating the effectiveness of face-to-face home and community-based mental health outreach interventions for older adults. It excluded outreach to institutional settings, which has been associated with improved clinical outcomes and lower use of acute services (34). It also excluded video-based outreach to rural areas. Although geriatric telepsychiatry shows promise for improving access to mental health care in underserved areas, literature on the application of this technology is limited to a small number of feasibility studies (35).

Our examination of the outreach literature was dominated by qualitative and observational outcome data (as evidenced by the 36 descriptive and four case study reports we found among the 58 studies that we reviewed). Although randomized controlled trials offer more support for a causal relationship, there is an inherent difficulty in executing and evaluating these trials in the field of mental health services. As such, the contribution from lower tiers of evidence should not be ignored, especially in an area with potential for improving access and quality of mental health care.

Conclusions

A diverse group of data-based studies support the use of outreach services in identifying isolated older adults and in improving the psychiatric symptoms of older persons. However, the preponderance of published literature in this area is anecdotal. Many of the published reports of outreach services suffer from methodologic limitations and potential difficulties with generalizability. Although some data provide evidence necessary for supporting national recommendations, much remains to be learned about the effectiveness of these services. Well-designed, controlled studies are needed to confirm the effectiveness of outreach services with respect to case-finding techniques and generalizability of symptom reduction. Rigorous evaluation of outreach services is suggested across diverse populations and residential settings. Further research should employ manualized protocols in conjunction with the use of fidelity assessments and common outcome measures. Ultimately, outreach services may provide an essential bridge that connects effective pharmacologic and psychosocial interventions with individuals most in need of these interventions. ♦

Acknowledgments

The authors thank Elliott Fisher, M.D., M.P.H., Robin Larson, M.D., and Douglas Van Citters, M.S., for their comments.

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