Older adults have historically understated 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
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, outreach 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 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 topical 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
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 significantly 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 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

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

<table>
<thead>
<tr>
<th>Study</th>
<th>Model</th>
<th>N</th>
<th>Setting</th>
<th>Diagnoses</th>
<th>Age (years)</th>
<th>% female</th>
<th>Demographic characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Randomized controlled trial[^{a}]</td>
<td>Ciechanowski et al. (16), 2004</td>
<td>Problem-solving therapy delivered by social workers under a psychiatrist’s supervision; intervention delivered in coordination with primary care providers</td>
<td>138 Senior public housing</td>
<td>Dysthymia, 49 percent; minor depression, 51 percent</td>
<td>Mean±SD, 73±8.5</td>
<td>79</td>
<td>11 percent were married or lived with partner; 72 percent lived alone; 58 percent were white; 56 percent were African American</td>
</tr>
<tr>
<td></td>
<td>Rabins et al. (17), 2000</td>
<td>Multidisciplinary development of care protocol; nurse-based outreach</td>
<td>298 Senior public housing</td>
<td>Variable</td>
<td>Mean, 75.4±8.5</td>
<td>85 in the intervention group; 70 in the control group</td>
<td>8 percent were married; 50 percent were widowed; 93 percent lived alone</td>
</tr>
<tr>
<td></td>
<td>Llewellyn-Jones et al. (18), 1999</td>
<td>Multidisciplinary treatment delivered primarily by the general practitioner</td>
<td>220 Residential facility</td>
<td>Depression</td>
<td>Mean, 84.3±5.8</td>
<td>85</td>
<td>10 percent were married; 71 percent were widowed; 66 percent lived in a hostel</td>
</tr>
<tr>
<td></td>
<td>Banerjee et al. (19), 1996</td>
<td>Psychogeriatric team treatment for elderly who receive home care</td>
<td>66 Home</td>
<td>Depression</td>
<td>Mean, 80.7±6.8</td>
<td>83</td>
<td>16 percent were married; 64 percent were widowed; 78 percent lived alone</td>
</tr>
<tr>
<td></td>
<td>Waterreus et al. (20), 1994; Blanchard et al. (21), 1995</td>
<td>Nurse-based case management; implementation of a care plan that was created by a hospital-based psychogeriatric team</td>
<td>96 Home</td>
<td>Minor depression, 55 percent; major depression, 23 percent; dementia, 6 percent</td>
<td>Mean, 76±6.8</td>
<td>85</td>
<td>22 percent were married; 63 percent were widowed</td>
</tr>
<tr>
<td>Quasi-experimental study[^{b}]</td>
<td>Cuijpers et al. (23), 2001</td>
<td>Training for caregivers and other employees of a residential home; information meeting for residents and relatives; group interventions offered</td>
<td>424 Residential facility</td>
<td>All residents; targeted on depressive symptoms</td>
<td>24 percent were aged 71 to 80; 58 percent were aged 81 to 90, and 16 percent were older than 90</td>
<td>79</td>
<td>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</td>
</tr>
<tr>
<td>Uncontrolled cohort, pre-post study Prospective</td>
<td>Kohn et al. (25), 2002</td>
<td>Multidisciplinary outreach team; implemented by a social worker</td>
<td>93 Home; study focused on homebound older adults</td>
<td>Affective disorder, 33 percent; dementia plus depression, 18 percent; other dementia, 33 percent</td>
<td>Mean, 79.7±7</td>
<td>76</td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>Seidel et al. (26), 1992</td>
<td>Multidisciplinary outreach team; management plan implemented by a case manager</td>
<td>100 Residence: 27 percent lived in their own home, 40 percent lived</td>
<td>Major depression, 14 percent; Alzheimer’s disease, 29 percent; other dementia,</td>
<td>Mean, 79.2±7.6</td>
<td>63</td>
<td>31 percent were married; 49 percent were widowed</td>
</tr>
</tbody>
</table>

Continues on next page
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 variety 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 support 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

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**Table 3**

Continued from previous page

<table>
<thead>
<tr>
<th>Study</th>
<th>Model</th>
<th>N</th>
<th>Setting</th>
<th>Diagnoses</th>
<th>Age (years)</th>
<th>% female</th>
<th>Demographic characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seidel et al.</td>
<td>Multidisciplinary geropsychiatric outreach team; home evaluation and linkage to medical, mental health, and social services</td>
<td>83</td>
<td>Home</td>
<td>Variable</td>
<td>Mean, 77; range, 60 to 94</td>
<td>71</td>
<td>63 percent were white; 35 percent were African American; 80 percent were single</td>
</tr>
<tr>
<td>Wasson et al.</td>
<td>Multidisciplinary outreach team; home evaluation and treatment</td>
<td>100</td>
<td>Home</td>
<td>Depression, 13 percent; dementia, 21 percent; alcohol abuse, 9 percent; schizophrenia, 4 percent</td>
<td>Mean, 75; 25 percent were aged 60 to 69; 36 percent were aged 70 to 79; and 28 percent were aged 80 to 89</td>
<td>69</td>
<td>82 percent were white; 5 percent were black; 18 percent were married; 40 percent were widowed</td>
</tr>
<tr>
<td>Reifler et al.</td>
<td>Multidisciplinary outreach team; home evaluation and treatment</td>
<td>95</td>
<td>Home</td>
<td>Affective disorder, 42 percent; organic mental disorder, 40 percent; schizophrenia, 12 percent; another diagnosis, 7 percent</td>
<td>Mean, 75; 42 percent were aged 65 to 74, and 48 percent were aged 75 to 84</td>
<td>71</td>
<td>34 percent lived with their spouse; 44 percent lived alone</td>
</tr>
<tr>
<td>Brown et al.</td>
<td>Multidisciplinary outreach team; case finding followed by home assessment and community support</td>
<td>30</td>
<td>Home and community</td>
<td>Depression, 15 percent; depression was the most common diagnosis</td>
<td>Mean, 75; 35 percent were aged 65 to 74, and 36 percent were aged 75 to 84</td>
<td>71</td>
<td>35 percent were married; 49 percent were widowed; 43 percent lived alone</td>
</tr>
</tbody>
</table>

* The comparison group consisted of persons who received usual care.
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

<table>
<thead>
<tr>
<th>Study</th>
<th>N of participants</th>
<th>Follow-up</th>
<th>Duration</th>
<th>Completion rate</th>
<th>Outcomes and results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention</td>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Randomized controlled trials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ciechanowski et al. (16), 2004</td>
<td>72</td>
<td>66</td>
<td>12</td>
<td>93 percent in the intervention group and 91 percent in the control group</td>
<td>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 0.8±.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.</td>
</tr>
<tr>
<td>Rabins et al. (17), 2000</td>
<td>131; 393 for weighted sample size</td>
<td>167; 488 for weighted sample size</td>
<td>26</td>
<td>50 percent in the intervention group and 58 percent in the control group</td>
<td>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,</td>
</tr>
</tbody>
</table>

Continues on next page
Table 4
Continued from previous page

<table>
<thead>
<tr>
<th>Study</th>
<th>N of participants</th>
<th>Follow-up</th>
<th>Outcomes and results</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Rabins et al.</td>
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<td>(cont.)</td>
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<tr>
<td>Llewellyn-Jones et al.</td>
<td>109</td>
<td>111</td>
<td>9.5 months</td>
<td></td>
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<tr>
<td>(18), 1999</td>
<td></td>
<td></td>
<td>79 percent in the intervention group and 75 percent in the control group</td>
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<tr>
<td></td>
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<td></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Banerjee et al.</td>
<td>33</td>
<td>36</td>
<td>6 months</td>
<td></td>
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<tr>
<td>(19), 1996</td>
<td></td>
<td></td>
<td>88 percent in the intervention group and 89 percent in the control group</td>
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<tr>
<td></td>
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<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Waterreus et al.</td>
<td>47</td>
<td>49</td>
<td>3 months</td>
<td></td>
</tr>
<tr>
<td>(20), 1994; Blanchard</td>
<td></td>
<td></td>
<td>92 percent in the intervention group and 80 percent in the control group</td>
<td></td>
</tr>
<tr>
<td>(21), 1995</td>
<td></td>
<td></td>
<td>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.</td>
<td>There was a lag time between initial assessment and the start of the intervention. Analyses did not control for baseline factors.</td>
</tr>
</tbody>
</table>
Waterreus et al.

(continued)

Blanchard et al. (22), 1999b

47 49 6 to 14.5 months 75 percent in the intervention group and 59 percent in the control group

Quasi-experimental study

Cuijpers et al. (23), 2001

213 211 1 year 59 percent

Uncontrolled cohort, pre-post study

Prospective

Kohn et al. (25), 2002

93 na Variable 100 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 intervention group had greater improvement in depression and functioning as measured by the Geriatric Depression Scale and the Global Assessment of Functioning Scale. Possible scores range from 1 to 100, with higher scores indicating better functioning. 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. The control group received more hours per week of homecare services after the intervention (34.6 hours) than the intervention group (26.8 hours).

The study did not have a control group and had a limited analysis of potential outcomes. The analyses were confounded by unmeasured variability.
<table>
<thead>
<tr>
<th>Study</th>
<th>N of participants</th>
<th>Follow-up</th>
<th>Outcomes and results</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kohn et al. (cont.)</td>
<td></td>
<td></td>
<td>hours compared with 51.6 hours, but they did not differ in their degree of being homebound.</td>
<td>potenti al systematic differences between participants who remained in the program.</td>
</tr>
<tr>
<td>Seidel et al. (26), 1992</td>
<td>100</td>
<td>na</td>
<td>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±.8 before the intervention and 3±.9 after the intervention. Eighty-seven percent of referring agents and 80 percent of caregivers perceived the service as helpful or very helpful.</td>
<td>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.</td>
</tr>
<tr>
<td>Wasson et al. (27), 1984</td>
<td>83</td>
<td>na</td>
<td>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).</td>
<td>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.</td>
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<tr>
<td>Reifler et al. (28), 1982</td>
<td>100</td>
<td>na</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Retrospective Brown et al. (29), 1996</td>
<td>95</td>
<td>na</td>
<td>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.</td>
<td>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.</td>
</tr>
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</table>
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 outcomes. 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

**Table 4** Continued from previous page

<table>
<thead>
<tr>
<th>Study</th>
<th>N of participants</th>
<th>Follow-up Duration</th>
<th>Completion rate</th>
<th>Outcomes and results</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Buckwalter et al. (30), 1991</td>
<td>30</td>
<td>4 months</td>
<td>100 percent</td>
<td>Improved psychiatric symptoms as measured by the Geriatric Depression Scale, the Short Portable Mental Status Questionnaire, and the Short Psychiatric Evaluation Schedule.</td>
<td>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.</td>
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*The comparison group consisted of persons who received usual care.

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.
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. ♦

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