One-Year Outcomes of a Randomized Clinical Trial Treating Depression in Low-Income Minority Women

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This study examines 1-year depressive symptom and functional outcomes of 267 predominantly low-income, young minority women randomly assigned to antidepressant medication, group or individual cognitive–behavioral therapy (CBT), or community referral. Seventy-six percent assigned to medications received 9 or more weeks of guideline-concordant doses of medications; 36% assigned to psychotherapy received 6 or more CBT sessions. Intent-to-treat, repeated measures analyses revealed that medication (p < .001) and CBT (p = .02) were superior to community referral in lowering depressive symptoms across 1-year follow-up. At Month 12, 50.9% assigned to antidepressants, 56.9% assigned to CBT, and 37.1% assigned to community referral were no longer clinically depressed. These findings suggest that both antidepressant medications and CBT result in clinically significant decreases in depression for low-income minority women.

Keywords: depression, clinical trials, ethnic-minority women, cognitive–behavioral therapy

Ethnic minority and poor individuals are less likely to receive treatment, particularly guideline-informed care, for major depressive disorder than are White and middle-class individuals (U.S. Department of Health and Human Services [DHHS], 2001). This may be related to the fact that most depression treatment studies include primarily White and middle-class populations (DHHS, 2001), so that little is known about the usefulness of established treatments for more disadvantaged populations. Establishing the effectiveness of depression care among poor young women is particularly important because rates of depression are elevated in women, younger age cohorts, and those living in or near poverty (Kessler, Berglund, & Demler, 2003). Previously, we found that both an antidepressant medication intervention and a cognitive–behavioral psychotherapy intervention were significantly more effective than referral to community mental health care for lowering depressive symptoms and improving functioning among predominantly poor young minority women 6 months after their depression was identified (Women Entering Care [WE Care]; Miranda et al., 2003). In this article, we examine 1-year outcomes for the same sample of women.

Long-term outcomes of depression care are important to examine because, even among more advantaged populations, many individuals do not sustain remission of symptoms. For example, 40% of the recovered sample relapsed by 18-month follow-up in the National Institute of Mental Health Treatment of Depression Collaborative Research Program (Shea et al., 1992). The accumulated stressors and lack of resources for coping with these stressors may diminish the benefits of short-term depression care for poor young women even beyond that seen with more advantaged populations. In a study of public mental health sector outpatients receiving guideline care, only 26% were considered in remission at 1 year (Rush et al., 2004).
In the WE Care study, we examined the effectiveness of well-established, evidence-based interventions for our impoverished population. Most U.S. psychiatrists favor the selective serotonin reuptake inhibitors for first-line medication treatment (Olfson & Klerman, 1993), with treatment extended to at least 6 months to maintain clinical effectiveness (Agency for Healthcare Research and Quality, 1993). Cognitive–behavioral therapy (CBT) is also an effective treatment for major depression. A meta-analysis of six randomized trials of antidepressant medications, CBT, or interpersonal psychotherapy (Casacalenda, Perry, & Looper, 2002) found that remission rates in intent-to-treat analyses average 46% for medications, 46% for psychotherapy, and 24% for controls. DeRubeis et al., in their 2005 trial comparing paroxetine with cognitive therapy, found similar remission rates. In our WE Care study at 6 months, depression treatment outcomes showed that 44.4% of medication, 32.2% of psychotherapy, and 28.1% of community referral patients had remitted (Miranda et al., 2003).

Previous work has shown that CBT produces sustained clinical gains compared with antidepressant medications that are withdrawn after clinical response (Blackburn, Eunson, & Bishop, 1986; Evans et al., 1992; Kovacs, Rush, Beck, & Hollon, 1981; Miller, Norman, & Keitner, 1989; Shea et al., 1992; Simons, Murphy, Levine, & Wetzel, 1986). In a study of treatment responders, patients treated with cognitive therapy were more likely to have a sustained response during 12-month follow-up than those withdrawn from medications; and they were just as likely to have sustained response as patients who kept taking medications through the follow-up (Hollon et al., 2005), suggesting that CBT may have important advantages over the long term.

In the present study, we explored long-term outcomes of two active treatments compared with community referral for care for disadvantaged, young minority women. Although our earlier work suggested that medication had a slight advantage in the short term (6 months; Miranda et al., 2003), previous literature suggests that CBT might be of more benefit over a longer time period. Treatment for depression in advantaged populations results in significant improvements in functional and work outcomes (Coulehan, Schulberg, Block, Madonia, & Rodriguez, 1997; Kocsis et al., 2002; Miller et al., 1998; Simon et al., 1996, 1999; Wells et al., 2000), with some finding long-term maintenance in these areas (Kocsis et al., 2002). We examined the impact of depression care on functioning of disadvantaged young women at 1-year follow-up as well. Specifically, we hypothesized that the psychotherapy intervention would result in fewer depressive symptoms and higher rates of remission at 12-month follow-up than the antidepressant intervention. Because functional outcomes appear closely tied to depressive symptoms, we predicted that the CBT intervention would also result in higher levels of functioning compared with the medication intervention.

Method

WE Care was a randomized, controlled trial of treatment for major depression in low-income women who received county health and welfare services. Women who agreed to random assignment were offered antidepressant medications by standard protocol, manual-driven CBT, or referral to community mental health care. The study was reviewed and approved by the institutional review boards of Georgetown University, University of California, Los Angeles, and the state of Maryland. All participants gave written informed consent for screening and separate consent for random assignment to care.

Sample

Details about participant selection, exclusion criteria, and treatments have been reported elsewhere (Miranda et al., 2003) and are summarized in Figure 1. We screened 16,286 women who received county health and welfare services in the Washington, DC, area suburban counties of Prince Georges and Montgomery, MD, and Arlington and Alexandria, VA. Of those screened, 13,975 were eligible based on ethnicity (African American, Latina, or White) and country of origin (United States for African Americans, Latin America for Latinas, and United States for Whites). Other groups were excluded so that ethnicity could be investigated empirically for its impact on outcome. Approximately 11% (1,583) of ethnically eligible women screened positive for major depressive disorder (MDD) on the Primary Care Evaluation of Mental Disorders (Spitzer et al., 1994), and 36% of those (566) were already receiving care or were excluded as inappropriate for our interventions (i.e., recently bereaved, current substance use disorders, plans to become pregnant or breast-feeding). Of those who screened eligible, 590 were subsequently excluded for either not meeting criteria for major depression (i.e., on the Composite International Diagnostic Interview [CIDI]; World Health Organization [WHO], 1997) and at least 1 week later reporting a score of 14 or greater on the Hamilton Depression Rating Scale (HDRS; Williams, 1988) or having comorbid disorders (schizophrenia, bipolar) that were likely to compromise response to our interventions. An additional 149 were excluded because they did not complete a final clinical interview. Only 11 women refused random assignment. Ultimately, 267 were eligible and randomly assigned to (a) antidepressant medications administered by a primary care nurse practitioner in consultation with a psychiatrist (n = 88), (b) CBT conducted by a psychologist (n = 90), or (c) referral to community mental health services (n = 89). Of these, 117 were African American, 134 were Latina, and 16 were White.

Demographic and clinical characteristics of the sample are presented in Table 1. There were no significant differences at baseline among the randomly assigned intervention groups. The sample was made up of young minority women, many of whom were uninsured and living below or near the poverty level. Women randomly assigned to medications reported somewhat higher levels of depressive symptoms at baseline than did the other two groups, a difference that neared significance (p = .06). On average, women reported an age of onset of depression of 23 to 24 years. About half the women were experiencing a mild to moderate episode and 47% a severe episode. Fewer than 20% of the women had experienced a previous episode of depression. Those with recurrent depression had experienced an average of about three episodes.

Outreach was an integral part of our intervention. Given the multiple demands on these working-poor women, outreach and help attending care was necessary to enable many to participate, including transportation and child-care funds. Women who screened positive for MDD were contacted by telephone a mean of 4.1 (± 4.4 SD) times before completing the CIDI (WHO, 1997) by telephone. Clinicians then contacted the woman an average of 7.8 (± 9.8 SD) times to encourage them to attend an initial clinical interview.

Interventions

Educational meetings. The women in our trial were not seeking care for depression, and many seemed to be unaware that their feelings of sadness and distress were indicative of a clinical problem that could be treated. Therefore, we designed a flexible educational intervention for women who were not comfortable beginning treatment at the time of random assignment to the two active treatments. Women assigned to medications or psychotherapy were given up to four educational meetings...
with their provider to learn about depression and its treatment. These sessions also served as an opportunity for the women to build trust with their provider before accepting treatment. In the medication condition 85 women (96%) attended a mean of 1.89 \((\pm 0.91 SD)\) sessions before beginning treatment. In the CBT condition, 60 women (67%) attended 2.37 \((\pm 1.76 SD)\) educations sessions before beginning psychotherapy. This was not significantly different.

**Medication.** We adapted a standard medication protocol for our low-income population. Because outreach was necessary to engage women in care, nurse practitioners supervised by a board-certified psychiatrist (Joyce Chung) served as our clinicians. These nurses were accustomed to providing outreach to disadvantaged populations and were adept at engaging our target population in care. The medication protocol offered 6 months of antidepressant treatment. Women were initially treated with paroxetine, prescribed according to a written dosing protocol informed by clinical guidelines. Adjustments in dosage were based on changes in HDRS scores and adequate time for medication effects. The range of paroxetine doses were 10 to 50 mg daily \((M = 30 mg)\). If the participant did not tolerate paroxetine or did not show a significant clinical response by 9 weeks despite dose adjustments, bupropion, an antidepressant with a different presumed mechanism of action as well as a different adverse effect profile, was administered.

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**Figure 1.** Participant flow in WE Care study. CIDI = Composite International Diagnostic Interview; MDD = major depressive disorder; CBT = cognitive--behavioral therapy; PRIME-MD = Primary Care Evaluation of Mental Disorders. From “Treating depression in predominantly low-income young minority women: A randomized controlled trial,” by J. Miranda, J. Y. Chung, B. L. Green, J. Krupnick, J. Siddique, D. A. Revicki, and T. Belin, *JAMA, 290*, Figure 1. Copyright 2003, American Medical Association. Adapted with permission.

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The psychotherapy treatment was administered by experienced psychotherapists previously trained in CBT and supervised by a licensed clinical psychologist with CBT expertise who conducted weekly group supervision of therapists to ensure adherence to the treatment. Therapy sessions were held at the county health clinics, WE Care offices, or, if necessary because of child- or elder-care responsibilities, in the participants’ homes. The manual guided-treatment was an 8-session modification of a 12-session intervention developed for low-income English- and Spanish-speaking medical patients (Munoz, Aguilar-Gaxiola, & Guzman, 1986; Munoz & Miranda, 1986). The manual was modified to include more topics per session and to be sensitive to the issues of young women, many of whom had histories of interpersonal trauma. Although we did not specifically elicit discussion of trauma during treatment, we consistently acknowledged these experiences and pointed out that they were likely related to current thoughts and behaviors. We also presented the CBT intervention as ways to cope with trauma-related problems. Women were offered group or individual care, depending on their schedules and possibilities for attending a group. Women who remained depressed (HDRS score > 7) after a course of CBT were offered 8 additional sessions.

Referral to community care. Women assigned to community referral were educated about depression and mental health treatments available in the community. The clinician offered to make an appointment for the woman at the end of the clinical interview to facilitate the referral and to speak with the mental health clinician. Approximately 25% of the women declined referral. Referred participants were contacted by the referring clinician within 1 or 2 weeks of referral to encourage them to attend the community care.

Measures

All outcome measures were orally administered, because a high proportion of women had not finished high school and may have been unable to read the materials. Screening interviews assessed age, marital status, employment status, ethnicity, country of birth, and level of education. To determine whether women met diagnostic criteria for MDD, the CIDI (WHO, 1997) was administered by telephone, assessing 12-month MDD, alcohol abuse or dependence, drug abuse or dependence, and lifetime mania and psychosis. To be eligible for the study, participants needed to have current MDD and to be negative for mania, psychosis, or alcohol or drug abuse or dependence in the past month.

Participants completed a structured version of the HDRS (Williams, 1988) by telephone at baseline, monthly for 6 months, and at Months 8, 10, and 12. Interviewers were trained to reliably administer this instrument by listening to and scoring tapes of clinician-administered HDRSs. In addi-
tion, a trained clinician listened to tapes of each interviewer and provided feedback until each therapist was judged reliable. For 28 interviews scored by two interviewers, \( \kappa = .63 \), indicating substantial agreement. Maladjustment in instrumental role functioning was measured by the Employee, Student, or Homemaker Role subscale of the Social Adjustment Scale (Weissman & Paykel, 1974), and social functioning was measured by the Social Functioning subscale of the Short Form 36-Item Health Survey (Ware & Sherbourne, 1992). Both functional measures were completed at baseline and at 3, 6, and 12 months. Telephone interviewers were unaware of group assignment. Clinicians were also unaware of group assignment until the end of the qualifying clinical interview, when a computer-generated random treatment assignment was revealed to them by means of a newly recorded telephone message they retrieved. The women were reimbursed $10 for completing each interview.

Data Analyses

The impact of random assignment to care on clinical and functional outcomes over 12 months was evaluated through a mixed-effects random intercept and slope repeated measures analysis comparing mean depression symptom and functioning scores across assigned treatment groups over successive time periods, with ethnicity, baseline HDRS scores, and baseline HDRS interacted with time as covariates. Mixed-effects models offer many advantages for analyzing longitudinal data in psychiatric research. The mixed-effects approach models changes over time at both the group and individual levels. A separate trend is estimated for each participant, based on available data, with missing data augmented by the individual's complete data and information from all other participants in the sample. This allows for the fact that, over time, different individuals may respond to treatment differently. Finally, this model accounts for the fact that repeated measures within subjects are correlated, providing accurate estimates of the standard errors (Gibbons et al., 1993).

Mixed-effects models also use all available data. An end-point analysis, in which only the baseline and final measurement are considered, ignores a large amount of data that can provide a much better picture of how individuals change over time rather than snapshot images of the first and last time points. In addition, because time of last measurement can vary for each individual, time is effectively ignored in end-point analyses. We fit models using data from baseline through Month 12. Because times varied for actual dates of interviews, our models used number of days since baseline as the time covariate. In addition, because depression scores differed by a nearly significant level (\( p = .06 \) across treatment groups at baseline, all our models controlled for baseline depression and the Baseline Depression \( \times \) Time interactions. Depressive symptom outcomes were measured at Months 1, 2, 3, 4, 5, 6, 8, 10, and 12. Functional outcomes were measured at Months 1, 3, 6, and 12. We tested for differences among the three randomly assigned groups in the intercepts, linear slopes, and quadratic slopes. The linear slope measures continuous change in scores over time. We included the quadratic slope to determine whether the interventions simply cause steeper declines in depression scores (linear slope) or initial steeper declines in depression scores followed by a leveling off over time (quadratic slope).

To examine whether our interventions were more or less effective for our distinct cultural groups (African American, Latina, White), we examined the interaction of treatment and ethnicity. We had poor power for detecting minority versus White differences but could examine African American versus Latina differences. Because no Treatment \( \times \) Ethnicity interactions were significant, all results are presented for ethnic groups combined. We did, however, control for ethnicity in all of our models.

Participants assigned to psychotherapy were equally likely to attend group or individual care. We examined the impact of attending group versus individual psychotherapy and found no differences in outcome, so all results are presented for CBT care combined.

To ensure that our results were not dependent on a pattern of nonrandom missing data, we replicated the major longitudinal analyses by using last observation carried forward and by multiply imputed data sets. We present the multiply imputed results only, because both techniques resulted in similar findings, and imputed analyses provide a test of robustness of the findings regarding the influence of missing data. Further, last observation carried forward techniques assume that outcomes remain constant at the last observed value (unlikely to be true even for untreated depression), and this methodology does not adjust for uncertainty because of missing data that are accounted for in multiply imputed analyses. Baseline data were complete with the exception of 10 individuals missing income, 5 missing instrumental role functioning, and 2 missing social functioning. The extent of missing data at follow-up was similar across the three randomized groups; the percentage of missing interviews at any particular month ranged from 24% to 38%. Furthermore, all assessments were independent of attending clinical treatment sessions, so that we were able to obtain follow-up data on many women who dropped out of treatment. Among those who did not complete treatment, 71% completed three or more assessments; among those who did complete treatment, 92% completed three or more assessments. To impute missing data, we performed multiple imputation using an approximate Bayesian bootstrap method (Rubin, 1987) with hot-deck cells determined using predictive mean matching (Little, 1988). Outcomes were imputed one variable at a time chronologically. Each imputation model was conditioned on age, ethnicity, insurance status, marital status, education, amount of treatment received, the previous month outcome, and the subsequent month outcome. Imputations were done separately by treatment group. SAS statistical software version 8.2 was used for all analyses (SAS Institute Inc., 1999–2001).

Results

Care Received

Despite our active outreach, engagement, and facilitation efforts, many women did not complete treatment. Of those assigned to medication treatment (\( n = 88 \)), 67 (76.1%) received 9 or more weeks of a therapeutic dose of antidepressant medications, and 41 (47%) received the full 6 months of medication. Eighteen (20%) were switched to bupropion because the participant either did not tolerate paroxetine or did not respond (50% reduction in HDRS by 9 weeks). Overall, the mean number of medications sessions attended was 4.7 (\( \pm 3.37 \) SD), and the average number of weeks on medication was 19.2 (\( \pm 3.11.17 \) SD). Of the women assigned to psychotherapy (\( n = 90 \)), 32 (35.5%) received six or more CBT sessions. Fifteen (17%) were partial responders (reported less than a 50% reduction in Beck Depression Inventory (Beck, Steer, & Brown, 1996) scores given by clinicians during treatment) and were offered an additional 8 sessions of CBT. Among those completing a course of CBT, 15 completed group and 17 completed individual treatment. The average number of CBT sessions attended was 4.2 (\( \pm 4.05 \) SD), and for those who were offered an additional 8 sessions of CBT, the average number of additional sessions attended was 3.8 (\( \pm 2.82 \) SD). Of the women assigned to community referral (\( n = 89 \)), 74 (83.1%) failed to attend even one session. Only 8 women attended four or more sessions of community care.

Women received minimal care during the posttreatment period of follow-up. During the follow-up, women assigned to medications reported a mean of 0.64 (\( \pm 2.7 \) SD) mental health visits; women assigned to psychotherapy made 1.06 (\( \pm 3.6 \) SD) mental health visits; and women assigned to community referral made 1.36 (\( \pm 3.6 \) SD) mental health visits.
1-Year Intent-to-Treat Depression Outcomes

We examined changes in depression symptoms for individuals as a result of randomization to medications, CBT, or community referral (regardless of receipt of treatment). The overall multivariate F tests comparing the intercept, slope, and quadratic slope were positive for medication in comparison to community referral (F = 11.6, p < .001) as well as for CBT in comparison to community referral (F = 3.3, p = .02). Parameter estimates are presented in Table 2. As indicated by the significant linear slopes, depressive symptoms declined for all groups over time. The significant quadratic curves for both medications and CBT indicate a steeper initial decline in depression scores followed by a leveling out of scores compared with the community referral group, which did not produce as steep of an initial decline. These results are represented in Figure 2. Medication-assigned women also differed significantly from CBT-assigned women in the quadratic slope (F = 4.03, p = .01). As can be seen, the medication group showed the steepest initial decline in depression symptoms followed by the CBT group.

We examined differences in remission rates among treatment groups at Month 12 (defined as HDRS score ≤ 7 and a 50% change from baseline to Month 12), using multiply imputed 12-month scores to include all participants as randomized. Results are given in Table 3. At 12 months, 50.9% of those assigned to antidepressants, 56.9% assigned to CBT, and 37.1% assigned to community referral were no longer clinically depressed. Odds ratio comparison indicates that this difference in remission between those assigned to the medication group and those assigned to community referral neared significance (p = .08) and is significant comparing those assigned to CBT with those referred to community care (p = .01).

1-Year Intent-to-Treat Functional Outcomes

For social functioning, the multivariate F test comparing the intercept, slope, and quadratic slope of the medication group to those referred to community care was significant (F = 4.2, p = .01). The tests comparing CBT to the referred and the medication groups were not significant. Parameter estimates are presented in Table 2. The quadratic slope of the medication and CBT interventions were significant. As can be seen in Figure 3, initial sharp increases in social functioning occur for those assigned to medications, whereas those assigned to community referral show a slower, steady increase in functioning over time. The steeper increase in social functioning for the CBT participants was not statistically different from that of the referred group.

For impairment in instrumental role functioning (employee, homemaker, student), the multivariate F test comparing the intercept, slope, and quadratic slope of the medication group to the referred group was significant (F = 5.14, p = .002). The tests comparing CBT with medication and referral were not significant. Parameter estimates are reported in Table 2. The quadratic slope was significant only for medications. As can be seen in Figure 4, all participants’ maladjustment in functioning in their major role decreased over time (as measured by the linear slopes), but those assigned to the medication condition reported steeper initial decreases.

### Table 2

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Effect</th>
<th>Overall comparisons</th>
<th>Medication vs. referred</th>
<th>CBT vs. referred</th>
<th>CBT vs. CBT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F (df)</td>
<td>p</td>
<td>Intercept, Linear Slope, and Quadratic Slope by Treatment Assignment for Intent-to-Treat Sample</td>
<td>p</td>
<td>p</td>
</tr>
<tr>
<td>Medication vs. referred</td>
<td>4.20 (3, 368)</td>
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<td>Intercept</td>
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<td>Medication vs. CBT</td>
<td>5.14 (3, 356)</td>
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<td>Intercept</td>
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<td>CBT vs. CBT</td>
<td>1.00 (3, 356)</td>
<td>0.39</td>
<td>Intercept</td>
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<td>Medication vs. referred</td>
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<td>Linear Slope</td>
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<td>Medication vs. CBT</td>
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<td>Linear Slope</td>
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<td>CBT vs. CBT</td>
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<td>Linear Slope</td>
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<td>Medication vs. referred</td>
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<td>0.01</td>
<td>Quadratic Slope</td>
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<tr>
<td>Medication vs. CBT</td>
<td>5.14 (3, 356)</td>
<td>0.002</td>
<td>Quadratic Slope</td>
<td>0.00000</td>
<td>0.00000</td>
</tr>
<tr>
<td>CBT vs. CBT</td>
<td>1.00 (3, 356)</td>
<td>0.39</td>
<td>Quadratic Slope</td>
<td>0.00000</td>
<td>0.00000</td>
</tr>
</tbody>
</table>
Outcomes of Treatment Completers

Our intent-to-treat analyses represent likely outcomes of offering depression care, with active outreach, to low-income women seen in county entitlement services, thus offering policy-relevant information on what outcomes could be expected if these services were truly offered in these settings. In addition, we examined the subsample who actually received what we considered minimally adequate care compared with those who received no care to better understand the clinical benefit of treatment for this disadvantaged population. For this purpose, we compared those women in the medication group who received at least 9 weeks of guideline-concordant treatment \((n = 67)\) and those in the psychotherapy group who received at least 6 CBT visits \((n = 32)\) with those in the community referral group who did not receive any mental health treatment \((n = 74)\). In these analyses, the CBT cell is small, with limited power for detecting differences. For the treatment completers, the results of the multivariate \(F\) test comparing the intercept, slope, and quadratic slope of the medication group versus the untreated group in depressive symptoms over 12 months was significant \((F = 10.6, p < .01)\), as was the test comparing CBT with the untreated group \((F = 3.65, p = .01)\). The completers among the medication and CBT groups did not differ significantly

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds ratio</th>
<th>OR (95% CI)</th>
<th>OR (p) value</th>
<th>% recovered</th>
<th>% recovered (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>Intent-to-treat sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referral ((n = 89))</td>
<td>ref</td>
<td></td>
<td></td>
<td>37.1</td>
<td>26.4–47.8</td>
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<tr>
<td>Medication ((n = 88))</td>
<td>1.76</td>
<td>0.93–3.33</td>
<td>0.08</td>
<td>50.9</td>
<td>38.6–63.2</td>
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<td>1.20–4.19</td>
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<td>56.9</td>
<td>46.3–67.5</td>
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<td>Treatment completers</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untreated ((n = 74))</td>
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<td></td>
<td>35.2</td>
<td>23.2–47.3</td>
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<td>Medication ((n = 69))</td>
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<td>1.06–4.70</td>
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<td>54.8</td>
<td>40.6–69.0</td>
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<td>CBT ((n = 32))</td>
<td>2.83</td>
<td>1.09–7.38</td>
<td>0.03</td>
<td>60.6</td>
<td>41.5–79.8</td>
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</table>

Note. Analysis was conducted on multiply imputed data. HDRS = Hamilton Diagnostic Rating Scale; OR = odds ratio; CI = confidence interval; CBT = cognitive–behavioral therapy.
from one another in depressive symptoms experienced over the 1-year follow-up.

As shown in Table 4 and Figure 5, significant quadratic slopes were found for both the medication and CBT groups. The medication and CBT interventions resulted in steep initial declines in depressive symptoms, with a leveling off over time. There was no significant linear or quadratic slope for the community-referred, untreated group. To examine rates of remission for the treatment completers (see Table 3), we used multiply imputed 12-month scores and found that 54.8% of...
Table 4 Results of Mixed Effects Models for Intercept, Linear Slope, and Quadratic Slope by Treatment Assignment for Treatment Completer and Untreated Sample

<table>
<thead>
<tr>
<th>Overall comparisons</th>
<th>Medication</th>
<th>CBT</th>
<th>Untreated</th>
</tr>
</thead>
<tbody>
<tr>
<td>F(df)</td>
<td>p</td>
<td>F(df)</td>
<td>p</td>
</tr>
<tr>
<td>Hamilton Diagnostic Rating Scale</td>
<td>10.63 (3, 791) &lt; .001</td>
<td>8.97 (791) &lt; .001</td>
<td>11.47 (791) &lt; .001</td>
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<tr>
<td>CBT vs. untreated</td>
<td>3.65 (3, 791) &lt; .01</td>
<td>4.72 (791) &lt; .001</td>
<td>1.61 (791) .11</td>
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<tr>
<td>Medication vs. CBT</td>
<td>1.39 (3, 791) .24</td>
<td>1.06 (791) .29</td>
<td>2.49 (234) .02</td>
</tr>
<tr>
<td>Maladjustment in Instrumental Role (SAS)</td>
<td>4.32 (3, 234) &lt; .01</td>
<td>4.16 (234) &lt; .001</td>
<td>2.45 (234) .02</td>
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<tr>
<td>CBT vs. untreated</td>
<td>1.60 (3, 234) &lt; .01</td>
<td>1.27 (234) .21</td>
<td>0.00000 .96</td>
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<tr>
<td>Medication vs. CBT</td>
<td>1.60 (3, 234) &lt; .01</td>
<td>1.31 (234) &lt; .001</td>
<td>0.00054 .04</td>
</tr>
<tr>
<td>Note. Time was centered before entering the regression model to reduce collinearity between the linear and quadratic terms. Each regression model also controlled for ethnicity, baseline depression and Baseline Depression X Time interaction. The coefficients for these terms are not shown.</td>
<td>medicated, n = 67; CBT, n = 90; untreated, n = 59.</td>
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These results demonstrate the continued effectiveness over 1 year of short-term medication and psychotherapy interventions...
for low-income and minority women suffering from depression. We find that women who were not seeking depression treatment, but who screened positive for depression in county entitlement programs, report rapid reduction of depression symptoms and return to functioning when offered medications or psychotherapy, along with the educational outreach and support, such as child care and transportation, necessary to obtain care. Policies supporting implementation of depression screening and care for women seen in public entitlement programs would decrease suffering and increase functioning among poor and minority women.

Our results also suggest that low-income and minority women who complete even minimally adequate treatment report clinical improvement similar to more advantaged populations. More than half of those who completed 9 weeks or more of an adequate dose of paroxetine or 6 weeks or more of CBT were recovered at 1 year. Only 35% of those obtaining no care had recovered. These remission rates for our treated population are relatively similar to those reported by Hollon et al. (2005), who examine outcomes of patients who responded to CBT or medications and were monitored for 12 months. Over the course of 12 months following response to care, 69.2% exposed to CBT, 52.8% continued on antidepressant medications, and 23.8% withdrawn from antidepressant medications were recovered. Providing care to disadvantaged women results in long-term outcomes quite similar to more advantaged groups.

However, the disadvantaged women in our trial, who were not seeking depression care initially, were much less likely to complete care compared with those in efficacy trials of more advantaged populations who were seeking care for their depression. For example, DeRubeis et al. (2005) found that 89% of their predominantly White and educated participants assigned to medications and 85% assigned to cognitive therapy remained in care at 8 weeks. As reported previously, in our disadvantaged sample, only 67% received 9 or more weeks of medication and 35% completed six or more sessions of CBT.

Overall, the medication intervention resulted in stronger response compared with CBT when pooling across the 12 months. Over the course of the 12 months, participants receiving medication had significantly fewer depressive symptoms than those assigned to CBT. This result is likely influenced by the minimal number of psychotherapy treatment sessions we were able to get the women to attend. The CBT intervention had rates of remission at 12 months equal to that of the medication condition. Thus, even minimal exposure to CBT might be useful for disadvantaged women over time. This suggests the importance of developing very brief, structured CBT interventions that might be introduced to women in the course of their county health care and may provide them with useful strategies for improving depression outcomes.

Medications resulted in advantages over both CBT and community referral in functional outcomes. The CBT was less effective in improving functional outcomes. Again, this may in part be due to the low number of sessions the women attended. Those who completed six sessions of CBT did report improved social functioning but not improved role functioning. Overall, the functional outcomes appear to mirror our symptom outcomes. As women respond to depression care, their overall functioning appears to improve.
We did not find differences in response to care between African American and Latina women, the samples we had adequate power to examine. In a review of the literature on outcomes of care for ethnic minorities (Miranda et al., 2005), African American and Latino patients were found to respond to depression interventions that are evidence based similarly to White participants. An investigation of depressed, impoverished women in Mexico (Lara, Navarro, Rubi, & Mondragón, 2003) found that a 6-week group intervention tailored to the problems and issues of these women was no more effective in treating their depression than one brief psychoeducational meeting. It seems likely that culturally tailored care alone is ineffective. Alternatively, culturally sensitive outreach and engagement seems essential to bringing low-income and minority women into evidence-based care.

In this study, active, culturally sensitive education and encouragement were needed to get women into care. Even so, we found that engaging low-income women into care who were not initially seeking mental health treatment was particularly difficult. For example, despite outreach and help with transportation and babysitting, only 36% of the women assigned to CBT attended six or more therapy sessions. It is possible that the care offered in this study was not experienced as culturally appropriate for these low-income women. Furthermore, the very demanding nature of these women’s life (multiple jobs, young children) often precluded consistent attendance at care. Despite this problem, the women appear to have benefited greatly from the care over a year’s follow-up. In the future, efforts to embed care for depression within settings that these women attend frequently may be more effective than delivering them in the family planning and entitlement program settings of this study. For example, offering psychotherapy in Head Start programs as women pick up their children might be a cost-effective and efficient setting to provide such care. Churches may also be effective settings to provide access to care for these women. Clearly, determining ways to facilitate women attending care for depression is important for this disadvantaged population.

Several limitations to this study should be noted. First, all measures were self-report, although the study measures have been used extensively in previous depression studies. Second, nearly half of the women who screened positive for depression did not follow up with diagnostic interviews, and others claimed to no longer be depressed when interviewed later. Thus, the extent to which this sample represents depressed low-income young women is not known. Third, women were queried by telephone multiple times for study assessments; the impact of these multiple contacts is not known. Fourth, although the psychotherapists were closely supervised, we did not measure adherence to the manualized treatment nor did we measure competence of the therapists. Finally, the impact of psychotherapy or medication apart from the enhancements necessary to bring women to treatment, including providing babysitting, transportation, and up to four educational sessions conducted by the clinical providers, cannot be determined in this study.

We conclude that providing evidence-based antidepressants or psychotherapy care for low-income women decreases their suffering. Antidepressant medications result in rapid decreases in de-
pressive symptoms, and both treatments achieve high rates of remission by 12 months.

References


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