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Do the Effects of Quality Improvement for Depression Care Differ for Men and Women?

Results of a Group-Level Randomized Controlled Trial

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Objective: We sought to examine whether a quality improvement (QI) program for depression care is effective for both men and women and whether their responses differed.

Design: We instituted a group-level, randomized, controlled trial in 46 primary care practices within 6 managed care organizations. Clinics were randomized to usual care or to 1 of 2 QI programs that supported QI teams, provider training, nurse assessment and patient education, and resources to support medication management (QI-Meds) or psychotherapy (QI-Therapy).

Patients: There were 1299 primary care patients who screened positive for depression and completed at least one questionnaire during the course of 24 months.

Outcome Measures: Outcomes were probable depression, mental health-related quality of life (HRQOL), work status, use of any antidepressant or psychotherapy, and probable unmet need, which was defined as having probable depression but not receiving probable appropriate care.

Results: Women were more likely to receive depression care than men over time, regardless of intervention status. The effect of QI-Meds on probable unmet need was delayed for men, and the magnitude of the effect was significantly greater for men than for women; therefore, this intervention reduced differences in probable unmet need between men and women. QI reduced the likelihood of probable depression equally for men and women. QI-Therapy had a greater impact on mental HRQOL and work status for men than for women. QI-Meds improved these outcomes for women.

Conclusions: To affect both quality and outcomes of care for men and women while reducing gender differences, QI programs may need to facilitate access to both medication management and effective psychotherapy for depression.

Key Words: depression, gender differences, unmet need, quality improvement

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A number of landmark studies[1–5] demonstrate that interventions designed to increase the availability of high-quality treatment to depressed primary care patients improve short-term and some longer-term mental health outcomes[6] and can also be cost-effective.[7–9] Despite those successes, we do not know whether these interventions affect men and women differently, which is an important issue, considering the fact that men with depression are less likely than their female counterparts to receive appropriate mental health care.[10] We know of only one quality improvement (QI) intervention study for depression that examined gender differences and showed that quality-adjusted life years were increased under QI for females but not for males. However, that analysis was conducted on a small sample of patients who were beginning a new treatment episode and were willing to take antidepressant medication.[11]

Gender is a potentially important moderating factor for QI effects, for several reasons. The prevalence of depressive disorders is 1.5 to 3 times higher among women than men in both community and treated samples;[12–18] consequently, clinicians may view depression as more relevant to women and be less attentive to the need for treatment among men. Researchers agree that women's higher rates of depression are not an artifact of help-seeking behavior or willingness to report symptoms but, in fact, reflect a real gender difference in mental health.[16,19,20]

QI might be less effective in one gender if the treatments that QI attempts to promote are less effective for that

gender group; however, there is no consistent evidence of differential treatment response by gender. Although some studies show differential response to treatment by gender,[21,22] no differential response was observed in a naturalistic follow-up of outpatients with major depressive disorder.[23] Although men and women have been shown to respond similarly to cognitive therapy,[24] one study suggests that men may have a more rapid and sustained clinical response to combination pharmacotherapy and psychotherapy.[25]

Gender differences in the course of depression may lead to differences in response to QI interventions independent of treatment responsiveness. However, the literature is mixed, and findings are inconsistent across studies. For example, the National Comorbidity Study[26] found no gender differences in depression recurrence, whereas other studies have reported that women have more episodes and are more likely to have their depression develop into a chronic and recurrent course of illness.[27–30] Differences in samples (eg, general population,[26] young adult,[27] women older than 30,[30] or patients[28,29]) and definition of depression outcomes (eg, probability of having an acute recurrence in past year,[26] number of subsequent episodes[29]) contribute to these inconsistencies.

Finally, gender differences in patterns of service use for depression may contribute to differential impacts of QI efforts, especially if women are more receptive to treatment. Women report more recent service use for psychiatric problems than do men,[31,32] even after controlling for differential need for services.[10] Furthermore, among those receiving office-based care, women are more likely to receive psychotropic drugs,[33] often at dosages below accepted therapeutic levels.[34,35]

All of these factors could lead to different responses in terms of quality of care and health outcomes, by gender, in response to QI programs for depression because these interventions are generally designed to improve outcomes through improving use of and adherence to depression treatments. Therefore, we address 2 relevant questions. First, are such interventions effective for each gender (even if the effectiveness differs)? This seems to be the most relevant question for implementing QI interventions and selecting patient populations to target. Second, is there differential responsiveness by gender? To the extent that men have more unmet need for depression treatment than women, there may be greater room for improvement among men, and therefore greater intervention effectiveness.

METHODS

Partners in Care is a group-level, randomized controlled trial conducted in 6 diverse managed primary care organizations. Among the participating organizations, 46 of 48 clinics and 181 of 183 clinicians participated in the study. Clinics were matched into blocks of 3 clusters each and randomized to usual care (UC) or to one of 2 QI programs, referred to here as QI-Meds or QI-Therapy (see Interventions section).[36]

Consecutive patients (n = 27,332) were screened between June 1996 and March 1997. Patients were eligible if they were positive on a depression screener (using stem items from the World Health Organization's 12-month Composite International Diagnostic Interview)[37] and intended to use the clinic as their main care setting during the next 12 months. Patients were ineligible if they were not insured by a plan or public-pay arrangement that covered the mental health specialty group that was trained for the intervention, or if they were younger than 18 years of age, or did not speak English or Spanish.

Of the 27,332 patients completing the screener, 3,918 were potentially eligible. However, many left the clinic before completing the multistage enrollment process. Among a total of 2417 patients available to confirm insurance eligibility, 241 were ineligible. Of those who read the informed consent, 1358 enrolled. The analytic sample includes 1299 patients who completed at least 1 of 5 patient assessment questionnaires administered during the course of 24 months. Response rates across waves ranged from 83% to 86% of enrolled respondents. RAND's IRB and those of participating organizations approved the study procedures.

Interventions

The intervention goal was to achieve QI by increasing the proportion of patients receiving proper care for the disorder. The 2 interventions had the same basic QI components with additional resources targeted in one toward medication management (QI-Meds) and in another toward facilitation of receipt of cognitive behavioral therapy (QI-Therapy).

Basic QI Intervention

Practices committed in-kind resources to support half of the study's intervention costs and identified a local expert team to be trained in implementing the interventions in their sites. Expert leaders were trained in clinician education and team management and asked to hold regular lectures for clinicians during a 6-month period. Nurse specialists were trained to educate patients, assess patient symptoms and functioning, facilitate referral, and enhance the work of the primary care provider. Antidepressant medications and psychotherapy were presented as equally effective depression treatments. Intervention leaders were trained to provide academic detailing and held monthly meetings to review care of patients and intervention progress. Primary care providers were asked to initially meet with each patient to decide on an appropriate course of treatment and to conduct at least one follow-up visit if the patient was willing.

QI-Meds Intervention

In the QI-Meds intervention, the nurse specialist provided medication management through monthly visits or telephone contacts for 6 or 12 months for those patients who chose antidepressants as part of their treatment plan. A psychiatric expert was available for consultation. Patients who preferred counseling were referred to the usual options for psychotherapy available at their respective practice settings.

QI-Therapy Intervention

In the QI-Therapy intervention, patients for whom psychotherapy was indicated were referred to participating Cognitive Behavioral Therapy (CBT)-trained therapists at a reduced copay. The psychotherapists provided CBT for 12 to 16 sessions. Brief CBT (4 sessions) was suggested as an option for patients with current symptoms who did not meet criteria for major disorder. In each study arm, patients and clinicians retained choice of treatment, and their use of intervention resources was optional. No study resources were available to UC patients.

Outcome Measures

Probable depression was defined at each follow-up if the patient reported at least 1 week of depression in the last 30 days, plus 2 weeks or more of depressed mood or loss of interest in pleasurable activities during the 6-month interval. The positive predictive value of this indicator for predicting actual depressive disorder that meets the full diagnostic criteria is 55%.[36] Mental health-related quality of life was measured by MCS-12, the global mental health scale of the short-form 12 (SF-12).[38] Work status was based on self-reported full- or part-time work during each study interval.

Probable appropriate care was defined as more than 3 counseling visits and/or use of antidepressant medication for at least 2 of the prior 6 months at or greater than the minimum dosage recommended in the AHCPR practice guidelines,[39] updated for newer antidepressant medications. Although this definition represents a level of treatment that would be considered minimal for the acute phase of treatment of patients with depressive disorder, most patients who met this minimum threshold for appropriate care actually exceeded it. For example, among patients who reported appropriate antidepressant use for at least 2 months during the 6 months after study enrollment, 90% actually used it for at least 6 months. Similarly, for patients who had at least 4 therapy visits during the initial 6 months, the mean number of visits was 12.5 (SD, 10.4), whereas for other patients the mean was 0.4 (SD, 0.8).[40] *Probable appropriate care* as defined above has been shown to be associated with outcome improvement and to be related to QI effects in pooled analyses.[40,41] We also examined a more lenient definition of *care received* as the use of

any antidepressant medication for any length of time and/or the receipt of any counseling during the prior 6-month period.

At follow-up, patients may no longer require treatments if their health has improved. To account for improved health, we defined *probable unmet need* as having probable depression but not receiving probable appropriate care, contrasted with persons without probable depression or who were depressed and receiving probable appropriate care. Because 45% of those with probable depression do not meet full diagnostic criteria for a depressive disorder and because treatment guidelines are not developed for persons with subthreshold depression, we consider this measure as reflecting *probable unmet need*.

Data Analysis

We described differences between men and women using 2-sample *t*-tests and F-tests for comparisons at baseline. Kaplan–Meier statistics were used for gender comparisons of duration of time until appropriate medications were received. For longitudinal models comparing the trajectories of outcomes over time, we conducted intent-to-treat analyses in which patients were included in the analysis according to their original assignment, irrespective of whether or not they remained in the practice, and whether or not they used intervention resources. We compared the gender-specific intervention effects by examining the interaction between gender and intervention.

We fit hierarchical linear regression models to continuous longitudinal responses using SAS Proc Mixed (SAS Institute, Cary, NC), and hierarchical logistic regression models to dichotomous longitudinal responses using SAS Glimmix. Repeated measurements were nested within individuals, and individuals were nested within clinics, in those analyses. We treated wave of measurement as a categorical variable and examined the fixed effects for wave; intervention condition; gender; the 2-way interactions for gender by intervention, gender by wave, and intervention by wave; and the 3-way interaction for gender by wave by intervention. When the 3-way interaction was significant, we kept it as well as all 2-way interactions and main effects in the model. When the 3-way interaction was not significant, we dropped it from the model and examined the separate 2-way interactions for significance. Significance was determined using *F* values from Proc Mixed and Glimmix models. We included type of depression at baseline (major depression, single or double, or current depressive symptoms without meeting criteria for major depression, with or without lifetime depression) as a categorical covariate in all models.

We examined a number of covariance structures within patients to determine the one that best fit the data. Using AIC, BIC, and also REML likelihood ratio tests,[42] the best fit for outcomes with 5 waves of data was a factor analytic structure with 2 factors. This model was significantly better than the

random intercept and slope model, although the 2 factors were roughly similar to a random intercept and a random slope. For probable depression, which had only 4 waves of data since all patients were depressed at baseline, we used a factor analytic covariance structure with a single common factor across waves. A random clinic effect was included in all longitudinal models.

We used multiple imputation for missing items at each wave.[43] Missing data within questionnaires were few (eg, the percentage missing all items used to score a given outcome variable ranged from 0 to 8%, depending on follow-up wave). Results across 5 imputed data sets were combined by averaging, and standard errors were adjusted to reflect both within-imputation variability and between-imputation variability.[44] Predicted means were computed using estimates from hierarchical models, adjusted for baseline differences. Significance was determined using a 2-tailed α of 0.05.

RESULTS

Of the baseline sample, 70% were women. Women tended to be younger relative to men (mean age, 42 vs. 46 years), were less likely to be college educated (20% vs. 27%), and were less likely to be married (51% vs. 62%; Table 1).[45,46] However, there were no gender differences in ethnicity. At baseline, women were more likely to have current single or double depression (62%) than men (53%) and had more symptoms of depression (mCESD) and lower mental health-related quality of life (MCS-12). Women were also more likely to have comorbid anxiety (48%) than men (40%). However, they did not differ in the number of chronic medical conditions or physical functioning. Overall, women were more likely to report having received depression care in the 6 months prior to baseline (36% vs. 26% for probable appropriate care and similar differences for any care and specialty MH visits) and to report more knowledge about depression and the efficacy of medication for depression.

Process of Care

Previous results for the overall sample found that at 6 months, patients in the QI-Meds and QI-Therapy groups reported higher rates of depression treatment than did those in the UC.[47,48] Patients in QI-Meds received higher rates of depression treatment than did UC or QI-Therapy patients at both 6 and 12 months. This pattern of effects did not differ between men and women: there was a significant main effect for gender ($t = 3.97$, $P = 0.0001$), but not for the interactions involving gender. Thus, consistent with the literature, women were more likely to receive treatment than men, both over time and across interventions.

However, intervention effects on probable *unmet need* differed for men and women across time and by specific intervention group (the 3-way interaction was significant, $F = 2.16$, $df = 8, 1267$, $P = 0.028$). The patterns of intervention by gender by time effects are plotted in Figure 1. Fitted values based on the longitudinal model are reported in Table 2, top. Relative to UC, women in QI-Meds showed an early (6-month) decrease in probable unmet need, which then decreased further at 12 months, then increased relative to women in UC. Men in QI-Meds showed a delay until 12 months when probable unmet need decreased by 37% points to well below that of their UC counterparts. At 12 months, there was a 22-percentage-point difference between men in QI-Meds and men in UC. The decreases from baseline to 12 and 18 months were significantly greater for men (37 and 37% points) than for women (22 and 18% points) in QI-Meds. Thus, QI-Meds reduced differences in probable unmet need between men and women. Men in QI-Therapy, relative to UC, showed a significant decrease of 16% points in probable unmet need at 6 months. The decrease in women, relative to UC, was smaller and not significant.

Clinical Outcome

Probable Depression

Previous results for the overall sample showed that, relative to UC, both QI interventions reduced the likelihood of probable depression in the first 12 months, and the intervention effects narrowed to nonsignificance at the 18- and 24-month follow-ups.[5,6] We found these results did not differ significantly for men and women; all interactions were insignificant (results not shown). The main effect for gender was also not significant. Thus, men and women had similar clinical outcomes, and QI benefited them similarly.

Functional Outcomes

Mental Health–Related Quality of Life (HRQOL)

Previous results for the overall sample revealed that, relative to UC and QI-Meds, patients in QI-Therapy showed early (6-month) improvement in functional outcomes, which was sustained over the full 2 years of the study.[6] We found this pattern differed for men and women over time and by specific intervention group (3-way interaction significant at $F = 2.12$, $df = 8, 1267$, $P = 0.031$).

The beneficial effect of QI-Therapy, relative to UC, was particularly strong for men at 6, 12, and 18 months (Fig. 2 and Table 2), but weakened at 24 months. For women, the beneficial effect of QI-Therapy, relative to UC, was delayed until the 12-month follow-up, but remained significant thereafter, although the magnitude of the beneficial effect is consistently smaller among women than among men across all follow-up waves.

Among women, mental HRQOL was significantly higher at 6 and 12 months for QI-Meds relative to UC. For men, there were no significant differences in mental HRQOL between QI-Meds and Usual Care at any period, although the magnitude of the difference at 6 months is larger than the magnitude of the difference among women.

TABLE 1. Baseline Characteristics of Primary Care Patients With Depression, by Gender

Characteristic	Women (n = 941) Mean or %	Men (n = 358) Mean or %	t or F value (P)
Demographics			
Mean age	41.84	46.09	−4.71 (< 0.0001)
% married	51.46	61.90	−3.35 (0.0008)
Education			$F (3,1296) = 2.90 (0.0339)$
Some high school or less	15.66	15.92	
High school grad	29.20	24.02	
Some college	34.98	32.91	
College grad	20.15	27.15	
Ethnicity			$F (3,1296) = 1.04 (0.3739)$
White	56.77	60.84	
Black	7.67	5.31	
Hispanic	29.14	27.38	
Other	6.42	6.48	
Health			
Depression type			$F (3,1296) = 3.14 (0.0247)$
Double depression	13.18	10.34	
Single depression	48.78	42.46	
Symptoms with lifetime	20.19	24.02	
Symptoms only	17.85	23.18	
Comorbid anxiety	47.84	40.50	2.29 (0.022)
Mean mCESD*	45.59	43.09	1.94 (0.053)
Mean MCS-12	34.0	36.39	−3.47 (0.001)
Mean PCS-12	45.06	44.66	0.51 (0.608)
No. chronic medical conditions	2.17	2.18	$F (3,1296) = 0.68 (0.56)$
Care received prior 6 months			
Any antidepressant or counseling	51.07	40.69	3.16 (0.002)
Probable appropriate care	35.92	25.69	3.30 (0.001)
Any specialty MH visits	33.66	26.94	2.19 (0.029)
Knowledge[†]			
Mean knowledge medications	3.36	3.30	2.03 (0.049)
Mean knowledge counseling	3.11	3.14	n.s.
Mean knowledge depression	3.65	3.52	3.44 (0.001)

Numbers vary from 1187 to 1299 because of missing data at baseline.

*The mCESD score is a modified version of the original Center for Epidemiological Study–Depression Scale.[45] The scale ranges from 0 to 100, with higher scores reflecting more severe depressive symptoms.

[†]5, 2, and 5 item scales (range, 1–5) asking about respondent's agreement or disagreement with statements indicating knowledge of depression and the efficacy of medication and counseling treatment.[46]

Employment Status

Previous results for the overall sample showed that the QI intervention improved employment outcomes relative to UC at 12 months,[5] and that patients from QI-Therapy clinics had significantly more employed days relative to controls over the 24 month followup. We found the pattern of employment status differed for men and women over time and by intervention group (3-way interaction was significant at $F = 1.99$, $df = 8, 1267$, $P = 0.044$). The beneficial effect of QI-Therapy, relative to both controls and QI-Meds, was strong for men at 6, 12, and 18 months (Fig. 3 and Table 2), but not for women. For women, it was the QI-Meds intervention, not QI-Therapy, which showed improved employment outcomes (at 12 months) relative to UC.

CONCLUSIONS

This is one of the first articles, to our knowledge, to examine gender differences in the effects on quality of care and
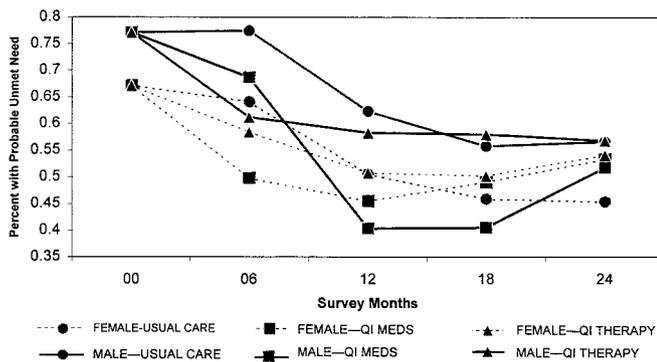
FIGURE 1. Probable unmet need for appropriate care.

health outcomes of practice-implemented QI interventions for depression. There are several main findings. First, our baseline analyses showed that depressed women were more likely than depressed men to have recently received depression care, confirming findings of prior studies of greater unmet need for treatment among men. Second, relative to Usual Care, the interventions increased the percentage of both men and women who received any type of care in the short term, although women continued to receive more care than men even under the interventions. Third, specific profiles of probable unmet need differed by time, intervention, and gender. Specifically, for QI-Meds, we found a greater reduction in probable unmet need among men at longer-term follow-up, even though women had greater initial reduction in probable unmet need during the active intervention period. For QI-Therapy, reduction in probable unmet need was limited to men, and then only at the 6-month (active intervention) follow-up. Fourth, at least one QI intervention improved health and/or employment outcomes among men and women; but as with probable unmet need, the effects differ by time, specific intervention, and gender. The QI reduction in the likelihood of probable depression over time was qualitatively similar for each gender. QI-Therapy improved mental health-related quality of life for both men and women, tended to have stronger benefits for men, limited to 6–18 months follow-up, whereas benefits for women began at 12 months and persisted through 24 months. From the perspective of illness burden, this suggests an observed year or so of benefit for each gender but with more substantial changes over that period among men. QI-Meds improved mental health related quality of life for women at 6 and 12 months and did not significantly affect this outcome for men, although this may be due to precision problems due to sample size, as the result at 6 months was larger among men (not significant) than among women (significant). Employment outcomes were improved for men by QI-Therapy (at 6, 12, and 18 months) and by QI-Meds for women (at 12 months).

Overall, these findings suggest important gains for both men and women, with QI-Therapy being especially effective for men in improving quality of life and employment outcomes

through 18 month follow-up, and QI-Meds being effective at improving quality of life and employment outcomes for women. These findings suggest that to reach both genders, QI programs should be flexible enough to provide basic QI services and offer either facilitated access to therapy or nurse specialist support for ongoing medication management.

One interesting finding is the delayed response to the QI-Meds intervention among men, in terms of reducing probable unmet need. One possible explanation for this result is that greater effort or elapsed time was required to either engage men in follow-up activities with the nurse, or to initiate medication monitoring. In fact, women at baseline were more knowledgeable than men about depression and the potential benefits of medication use. However, when we estimated the hazard rate for receiving appropriate antidepressant medication, we found that most of the increase in use of treatments occurred during the first 6 months of the study for both males and females.

What was it about QI-Therapy that was particularly beneficial for men? Higher percentages of men in QI-Meds were getting probable appropriate care, resulting in decreased probable unmet need, yet it appears that they were not getting as much benefit from that QI intervention as were men under QI-Therapy. This finding does not appear to be related to greater sickness levels in QI-Meds: At baseline, men in QI-Therapy were more likely to have major depression (63%) than were men in QI-Meds (49%).

We found similar beneficial effects of QI-Therapy for minorities.[49] The more readily available treatment of both types within this intervention may have made this intervention particularly suitable for use in groups with high unmet need for care, whether minority groups or men. In our study, however, less than one third of patients in QI-Therapy received Cognitive Behavioral Therapy.[48]

To understand specific components of the interventions that may have been more or less effective for men and women, future studies will need to examine differences between men and women in their adherence to intervention protocol, such as number of contacts with the nurse specialist, utilization of educational materials, completion of a primary care plan, referral to study psychotherapy, and number of psychotherapy sessions attended.

Even under the interventions, both genders had a high likelihood of probable unmet need and of probable depression at each follow-up. Therefore an important priority for future studies is also to strengthen QI interventions for both men and women; our findings may afford some clues as to what features may be useful in achieving these aims, and for what outcomes and timeframes of effects. Efforts to improve such interventions for both genders would be a natural follow-up to the National Institutes of Mental Health's public health education campaign to reach men with depression (http://menanddepression.nimh.nih.gov).

TABLE 2. Outcomes and Care Received for Men and Women by Intervention Status

Month of Study	Female						Male					
	UC	QI-Med	QI-Therapy	UC versus QI-M (*P* Value)*	UC versus QI-T (*P* Value)	QI-M versus QI-T (*P* Value)	UC	QI-Med	QI-Therapy	UC versus QI-M	UC versus QI-T	QI-M versus QI-T
Probable unmet need for appropriate care												
00		0.67						0.77				
06	0.64	0.50	0.58	2.93 (0.00)	1.24 (0.21)	−1.88 (0.06)	0.77	0.69	0.61	1.43 (0.15)	2.34 (0.02)	1.24 (0.22)
12	0.51	0.45†	0.51	0.78 (0.44)	−0.15 (0.88)	−0.97 (0.33)	0.62	0.40	0.58	2.58 (0.01)	0.51 (0.61)	−1.91 (0.06)
18	0.46	0.49†	0.50	−0.71 (0.48)	−0.90 (0.37)	−0.17 (0.87)	0.56	0.40	0.58	1.77 (0.08)	−0.16 (0.87)	−1.79 (0.07)
24	0.45	0.53	0.54	−1.51 (0.13)	−1.66 (0.10)	−0.11 (0.92)	0.57	0.52	0.57	0.62 (0.53)	0.05 (0.96)	−0.53 (0.59)
Mental HRQOL												
00		34.26						34.64				
06	38.36	40.72	40.11†	−2.14 (0.03)	−1.67 (0.10)	−0.09 (0.93)	38.66	41.38	44.05	−1.61 (0.11)	−3.00 (0.00)	0.70 (0.48)
12	37.48	40.27	40.36†	−2.52 (0.01)	−2.74 (0.01)	−1.72 (0.09)	38.26	39.08	44.85	−0.47 (0.64)	−3.65 (0.00)	−3.03 (0.00)
18	38.59	40.61	42.49	−1.75 (0.08)	−3.57 (0.00)	−1.74 (0.08)	40.75	41.20	44.75	−0.25 (0.80)	−2.13 (0.03)	−1.85 (0.06)
24	39.22	40.18	41.10	−0.82 (0.41)	2.60 (0.01)	0.58 (0.56)	38.47	40.25	41.41	−1.00 (0.32)	−1.57 (0.12)	−0.60 (0.55)
Work												
00		0.61						0.60				
06	0.58	0.64	0.59†	−1.51 (0.13)	−0.17 (0.87)	1.41 (0.16)	0.58	0.57	0.71	0.22 (0.83)	−2.39 (0.02)	0.77 (0.44)
12	0.58	0.65	0.59†	−1.97 (0.05)	−0.43 (0.66)	1.63 (0.10)	0.61	0.56	0.72	0.86 (0.39)	−1.94 (0.05)	−2.61 (0.01)
18	0.58	0.64	0.57†	−1.72 (0.09)	0.24 (0.81)	2.02 (0.04)	0.54	0.55	0.70	−0.05 (0.96)	−2.60 (0.01)	−2.43 (0.02)
24	0.60	0.65	0.53	−1.20 (0.23)	1.65 (0.10)	2.91 (0.00)	0.56	0.57	0.59	−0.13 (0.90)	−0.51 (0.61)	−0.37 (0.71)

*Tests of difference between study arms in changes between baseline and each follow-up wave.
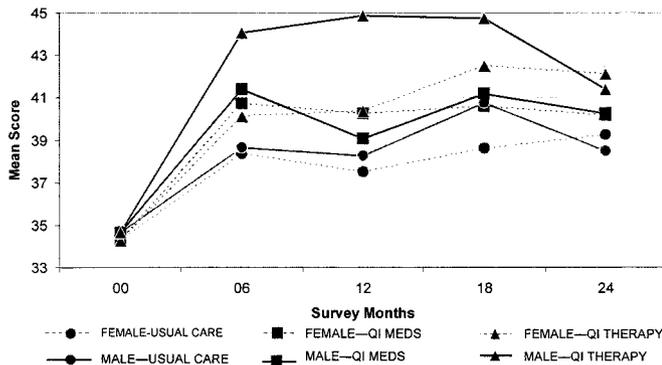†Females significantly different from males at *P* = 0.05 or less.

FIGURE 2. Mental HRQOL.

FIGURE 3. Work outcomes.

Reductions in healthcare and outcome disparities, including those related to gender, are important goals of medicine, and it is important to know that we can get close to that goal without further increasing inequalities between men and women. On average, Americans receive only about half the medical care indicated for a variety of health conditions.[50] An effectiveness study that does not mandate treatment is unlikely to fully solve this problem of virtually universal deficits in quality of care. It is encouraging that we can use a feasible model that respects patient and provider choice of treatment to improve quality of care for depression, while narrowing key aspects of the gap between men's and women's care.

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efforts. This study is a sister-study to the NIMH Cooperative Agreement to Test Depression Practice Guidelines.

REFERENCES

1. Katon W, Robinson P, Von Korff M, et al. A multifaceted intervention to improve treatment of depression in primary care. *Arch Gen Psychiatry*. 1995;53:924–932.
2. Lin E, Simon G, Katon W et al. Can enhanced acute-phase treatment of depression improve long-term outcomes? A report of randomized trials in primary care. *Am J Psychiatry*. 1999;156:643–645.
3. Schulberg HC, Block MR, Madonia MJ, et al. Treating major depression in primary care practice: 8-month clinical outcomes. *Arch Gen Psychiatry*. 1996;53:913–919.
4. Simon G, Von Korff M, Rutter C, et al. Randomized trial of monitoring, feedback, and management of care by telephone to improve treatment of depression in primary care. *BMJ*. 2000;320:550–554.
5. Wells KB, Sherbourne CD, Schoenbaum M, et al. Impact of disseminating quality improvement programs for depression in managed primary care: a randomized controlled trial. *JAMA*. 2000;283:212–220.
6. Sherbourne CD, Wells KB, Duan N, et al. Long-term effectiveness of disseminating quality improvement for depression in primary care. *Arch Gen Psychiatry*. 2001;58:696–703.
7. Schoenbaum M, Unützer J, Sherbourne C, et al. The cost-effectiveness of practice-initiated quality improvement for depression: results of a randomized, controlled trial. *JAMA*. 2001;286:1325–1330.
8. Simon GE, Katon WJ, VonKorff M, et al. Cost-effectiveness of a collaborative care program for primary care patients with persistent depression. *Am J Psychiatry*. 2001;158:1638–1644.
9. Pyne JM, Rost KM, Zhang M, et al. Cost-effectiveness of a primary care depression intervention. *J Gen Intern Med*. 2002;18:432–441.
10. Young AS, Klap R, Sherbourne CD, et al. The quality of care for depressive and anxiety disorders in the United States. *Arch Genl Psychiatry*. 2001;58:55–61.
11. Pyne JM, Smith J, Fortney J, et al. Cost-effectiveness of a primary care intervention for depressed females. *J Affect Disord*. 2003;74:23–32.
12. Dohrenwend BP, Dohrenwend BS. Sex differences and psychiatric disorders. *Am J Sociol*. 1976;81:1147–1154.
13. Kessler RC, McGonagle KA, Nelson CB, et al. Sex and depression in the National Comorbidity Survey. II: cohort effects. *J Affect Disord*. 1994; 30:15–26.
14. Nolen-Hoeksema S. Sex differences in unipolar depression: evidence and theory. *Psychol Bull*. 1987;101:259–282.
15. Nolen-Hoeksema S. *Sex Differences in Depression*. Stanford, CA: Stanford University Press; 1990.
16. Weissman MM, Klerman GL. Sex differences in the epidemiology of depression. *Arch Gen Psychiatry*. 1977;34:98–111.
17. Weissman MM, Klerman GL. Gender and depression. *Trends Neurosci*. 1985;8:416–420.
18. Weissman MM, Klerman GL. The course, morbidity, and costs of depression. *Arch Gen Psychiatry*. 1992;49:831–834.
19. Mirowsky J, Ross CE. Sex differences in distress: Real or artifact? *Am Sociol Rev*. 1995;60:449–468.
20. Nazroo JY, Edwards AC, Brown G. Gender differences in the prevalence of depression: artifact, alternative disorders, biology or roles? *Sociol Health Illness*. 1998;20:312–330.
21. Kornstein SG, Schatzberg AF, Thase ME, et al. Gender differences in treatment response to sertraline versus imipramine in chronic depression. *Am J Psychiatry*. 2000;157:1445–1452.
22. Piazza LA, Markowitz JC, Kocsis JH, et al. Sexual function in chronically depressed patients treated with SSRI antidepressants: a pilot study. *Am J Psychiatry*. 1997;154:1757–1765.
23. Zlotnick C, Shea MT, Pilkonis PA, et al. Gender, type of treatment of dysfunctional attitudes, social support, life events, and depressive symptoms over naturalistic follow-up. *Am J Psychiatry*. 1996;153:1021–1027.
24. Thase ME, Reynolds CF, Frank E, et al. Do depressed men and women respond similarly to cognitive behavior therapy. *Am J Psychiatry*. 1994;151:500–505.
25. Frank E, Carpenter LL, Kupfer DJ. Sex differences in recurrent depression: are there any that are significant? *Am J Psychiatry*. 1988;145:41–45.
26. Kessler RC, McGonagle KA, Swartz M, et al. Sex and depression in the National Comorbidity Survey: I. Lifetime prevalence, chronicity and recurrence. *J Affect Disord*. 1993;29:85–96.
27. Ernst C, Angst J. The Zurich Study, XII: sex differences in depression: evidence from longitudinal epidemiological data. *Eur Arch Psychiatry Clin Neurosci*. 1992;241:222–230.
28. Keitner GI, Ryan CE, Miller IW, et al. 12-month outcome of patients with major depression and comorbid psychiatric or medical illness (Compound Depression). *Am J Psychiatry*. 1991;148:345–350.
29. Winokur G, Coryell W, Keller M, et al. A prospective follow-up of patients with bipolar and primary unipolar affective disorder. *Arch Gen Psychiatry*. 1993;50:456–465.
30. Sargeant JK, Bruce ML, Florio LP, et al. Factors associated with 1-year outcome of major depression in the community. *Arch Gen Psychiatry*. 1990;47:519–526.
31. Kessler RC, Brown RL, Broman CL. Sex differences in psychiatric help-seeking: evidence from four large-scale surveys. *J Health Soc Behav*. 1981;22:49–64.
32. Leaf PJ, Bruce ML. Gender differences in the use of mental health-related services: a re-examination. *J Health Soc Behav*. 1987;28:171–183.
33. Simoni-Wastila L. Gender and psychotropic drug use. *Med Care*. 1998; 36:88–94.
34. Katon W, VonKorff M, Lin E, et al. Adequacy of duration of antidepressant treatment in primary care. *Med Care*. 1992;30:67–76.
35. Kamerow DB, Pincus HA, Macdonald DI. Alcohol abuse, other drug abuse, and mental disorders in medical practice. Prevalence, costs, recognition, and treatment. *JAMA*. 1986;255:2054–2057.
36. Wells KB. The design of Partners in Care: evaluating the cost-effectiveness of improving care for depression in primary care. *Soc Psychiatry Psychiatr Epidemiol*. 1999;34:20–29.
37. World Health Organization. *Composite International Diagnostic Interview (CIDI) Core Version 2.1. Interviewer's Manual*. Geneva: World Health Organization; 1997.
38. Ware JE Jr., Kosinski M, Keller SD. *SF-12: How to Score the SF-12 Physical and Mental Health Summary Scales*. Boston: The Health Institute, New England Medical Center; 1995.
39. Depression Guidelines Panel. *Depression in Primary Care: Volume 2: Treatment of Major Depression*. Rockville, MD: US Dept. of Health and Human Services. Public Health Service, Agency for Health Care Policy and Research; 1993. AHCPR Publication No. 93–0551.
40. Schoenbaum M, Unützer J, McCaffrey D, et al. The effects of primary care depression treatment on patients' clinical status and employment. *Health Serv Res*. 2002;37:1145–1158.
41. Wells KB, Sherbourne CD, Schoenbaum M, et al. Five-year impact of quality improvement for depression: results of a group-level, randomized, controlled trial. *Arch Gen Psychiatry*. In press.
42. SAS Institute Inc. *SAS/STAT User's Guide*. Version 8, Cary, NC: SAS Institute Inc.; 1999:2, 100.
43. Little RJA, Rubin DB. *Statistical Analysis with Missing Data*. New York: J. Wiley & Sons; 1987.
44. Rubin DB. *Multiple Imputation of Nonresponse in Surveys*. New York: John Wiley & Sons; 1987.
45. Orlando M, Sherbourne CD, Thissen D. Summed-score linking using item response theory: application to depression measurement. *Psych Assessment*. 2000;12:354–359.
46. Dwight-Johnson M, Sherbourne CD, Liao D, Wells KB. Treatment preferences among depressed primary care patients. *J Gen Intern Med*. 2000;15:527–534.
47. Unützer J, Rubenstein L, Katon WJ, et al. Two-year effects of quality improvement programs on medication management for depression. *Arch Gen Psychiatry*. 2001;58:935–942.
48. Jaycox LH, Miranda J, Meredith LS, et al. Impact of a quality improvement intervention in primary care on access to psychotherapy for depression. *Ment Health Serv Res*. 2003;5:109–120.
49. Miranda J, Duan N, Sherbourne C, et al. Improving care for minorities: can quality improvement interventions improve care and outcomes for depressed minorities? results of a randomized, controlled trial. *Health Services Res*. 2003;38:613–630.
50. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003;348:2635–2645.