Objective: Individuals visiting a primary care practice were screened to determine the prevalence of depressive disorders. The DSM-IV-TR research criteria for minor depressive disorder were used to standardize a definition for subthreshold symptoms.

Method: Outpatients waiting to see their physicians at 3 community family medicine sites were invited to complete a demographic survey and the Primary Care Evaluation of Mental Disorders Patient Questionnaire (PRIME-MD PQ). Those who screened positive for depression on the PRIME-MD PQ were administered both the PRIME-MD Clinician Evaluation Guide (CEG) mood module and the Hamilton Depression Rating Scale (HDRS) by telephone. Data were collected over a 2-year period (1996–1998).

Results: 1,752 individuals completed the PRIME-MD PQ with 478 (27.3%) scoring positive for depression. Of these 478 patients, 321 received telephone follow-up using the PRIME-MD CEG mood module and the HDRS. PRIME-MD diagnoses were major depressive disorder (n = 85, 26.5%), dysthymia (n = 31, 9.6%), minor depressive disorder (n = 51, 15.9%), and no depression diagnosis (n = 154, 48.0%). The mean HDRS scores by diagnosis were major depressive disorder (20.3), dysthymia (12.9), minor depressive disorder (11.7), and no depression diagnosis (5.8). Post hoc analyses using Dunnett’s C test indicated differences between each of the 4 groups at P ≤ .05, with the exception that dysthymia and minor depressive disorder were not significantly different.

Conclusions: Minor depressive disorder was more prevalent than dysthymia and had similar symptom severity to dysthymia as measured by the HDRS. More research using standardized definitions and longitudinal studies is needed to clarify the natural course and treatment indications for minor depressive disorder.

Primary Care Evaluation of Mental Disorders (PRIME-MD)
Screening for Minor Depressive Disorder in Primary Care

Marijo B. Tamburrino, MD; Denis J. Lynch, PhD; Rollin W. Nagel, PhD; and Mary Kay Smith, MD

An evolving concept of depressive symptoms as being fluid and changing over the course of time rather than being a static state has led to focused study of subthreshold depression. In response to reports of family physicians’ missing 30%–50% of cases of depression, some family physicians believe they are seeing milder, more transient forms of subthreshold depression that require neither identification nor treatment. However, other authors have reported that subthreshold depression is associated with significant morbidity. In the classic study by Wells et al of over 20,000 individuals in medical and mental health outpatient settings, depressive symptoms alone in patients without major depressive disorder or dysthymia were associated with significant social dysfunction and disability. Horwath et al found that subthreshold symptoms were predictive of first onset of major depressive disorder in 50% of cases 1 year later. Lin’s group identified the persistence of subthreshold depressive symptoms 7 months after starting antidepressant therapy as a major risk for relapse of major depressive disorder. A growing body of literature suggests that subthreshold depressive symptoms are a variant of mood dysfunction that should be considered for possible preventive and treatment strategies. However, empirical evidence has yielded mixed results for the effectiveness of treating subthreshold depression.

The conflicting findings surrounding subthreshold depression may be partially explained by the heterogeneity of the condition being studied; many different definitions of subthreshold depression have been used in the past. To standardize the assessment of subthreshold depression, the DSM-IV-TR has published research criteria for the proposed diagnosis of minor depressive disorder. Rapaport’s group studied the general population and found a point prevalence rate of 2%–5% for minor depression, while others estimate a 5% prevalence of minor depression in the general population. Rates of minor depression in primary care have been reported to be as low as 4.5% and as high as 17%. More studies using the standardized definition of minor depressive disorder are needed to clarify the prevalence and severity of this disorder among individuals in primary care settings.

This study explores the prevalence of depression, including minor depressive disorder as defined by
PSYCHIATRY

DSM-IV-TR research criteria (Table 1), in primary care populations. This is accomplished by using the Primary Care Evaluation of Mental Disorders (PRIME-MD)17 to identify depressive symptoms and diagnoses and the Hamilton Depression Rating Scale (HDRS)18,19 to assess symptom severity.

METHOD

Outpatients waiting to see their primary care physicians at 3 community family medicine sites were invited to participate in this study. The first practice was in a rural setting and served patients who were primarily from the lower middle class. The second practice was in an urban setting, and the third practice was in a suburban setting. These latter 2 practices served patients who were in the lower to upper middle classes. Participants were excluded if they were under 18 years of age or unable to read and speak English. Institutional review board approval from the participating institutions was obtained. After consenting to participate, subjects completed a demographic survey and the PRIME-MD Patient Questionnaire (PQ)17 in the waiting room. The demographic survey had questions about age, gender, education, race, smoking (“how many cigarettes do you smoke per day?”), and drinking (“how many alcoholic drinks do you have per week?”). Data were collected over a 2-year period (1996–1998).

The PRIME-MD PQ is a self-administered 1-page questionnaire consisting of 26 yes/no questions about the presence of symptoms and signs during the past month. The questionnaire serves as an initial screen for 5 general groups of mental disorders commonly found in the general population. The 2 screening questions for depression on the PRIME-MD PQ are (question 18) “During the past month, have you often been bothered by having little interest or pleasure in doing things?” and (question 19) “During the past month, have you often been bothered by feeling down, depressed, or hopeless?”

The PRIME-MD Clinician Evaluation Guide (CEG) is a structured interview form with 5 modules, with completion of each one triggered by positive responses to specific screening questions on the PRIME-MD PQ. Individuals who screened positive for depression upon completing the PRIME-MD PQ in this study were contacted by telephone and administered the CEG mood module and the HDRS. The 17 questions on the PRIME-MD CEG mood module allow the clinician to reach DSM-IV-TR depression diagnoses. Although the initial prompt on the CEG explores symptoms experienced during the preceding 2 weeks, the algorithm also includes questions about the longitudinal course of symptoms that can result in diagnoses such as dysthymia. The CEG diagnoses for the mood disorders module have been shown to have excellent positive predictive value with satisfactory specificity and sensitivity.20

The HDRS19 is a 17-item questionnaire. Scores of 0–10 suggest no depression, scores of 11–17 are indicative of mild depression, and a rating of 18–24 suggests moderate depression.

The CEG and HDRS were administered by a team of 2 paid research assistants who were trained and supervised by the fourth author (M.K.S.), an experienced psychiatrist. Training activities included observation by the assistants of the trainer doing a telephone interview and role playing the interview with each other and the supervisor, as well as being observed and monitored by the trainer. Research assistants were allowed to do the telephone interviews on their own only when the supervising psychiatrist judged them to be ready.

RESULTS

The PRIME-MD PQ was completed by 1,752 patients, with 478 (27.3%) of these individuals screening positive for depression. Eighty percent of the individuals who were approached to complete the PRIME-MD PQ while waiting to see their physicians agreed to participate in this phase of the study. The sample of 1,752 subjects was primarily female (71.1%) and employed full-time (53.7%), with a mean age of 42.7 years. Figure 1 represents the flow of subjects through the study and their final classification based on PRIME-MD PQ responses.

Of the 478 individuals who screened positive for depression, 330 (69%) were able to be contacted by telephone and received telephone follow-up with the CEG mood module and the HDRS. However, of these 330 participants, 5 had a PRIME-MD depression diagnosis that was indeterminate and 4 had missing HDRS scores, resulting in a final sample of 321 subjects (67.1%). There were no significant differences between the 330 individuals contacted by telephone and the 148 positive screening

<table>
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<th>CLINICAL POINTS</th>
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<td>◆ Minor depressive disorder is relatively common among primary care patients, especially the elderly.</td>
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<td>◆ Treatment guidelines emphasize the importance of treating depressive symptoms to full remission.</td>
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This analysis resulted in a rate of 15.3% for the rate of depression in the entire positively screened status of those screening positive was used to estimate weighting strategy using gender, age, and employment did not participate in the CEG telephone screening, a results, one can extrapolate a base rate of 4.3% in the gen-
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minor depressive disorder in those who screened positive
order because false negatives were not included in the
estimate. By the PRIME-MD PQ, this calculation may
low-up interviews of anyone who screened negative for
depression by the PRIME-MD PQ, this calculation may

nonparticipants in their gender ($\chi^2 = 0.73, P > .39$; 74% of
those screened positive for depression were female), em-
ployment status ($\chi^2 = 1.39, P > .23$; 70.8% of those who
screened positive were employed), or age ($\chi^2 = 3.07,
P = .08$; 13% of those who screened positive were aged 60
years or older). No individuals who screened negative
for depression were contacted by telephone for follow-up
with the CEG and HDRS.

Among the final sample, 52 individuals met criteria for
major depressive disorder only, and an additional 33 met
criteria for both major depressive disorder and dysthymia.

There was a difference in mean HDRS scores corre-
spanding to the CEG mood module diagnoses in the final
sample ($F = 98.91, P < .001$). Post hoc analysis indicated
that the only mean HDRS group scores that were not sig-
ficantly different were for those individuals with dys-
thyemia and minor depressive disorder (Table 2) Applying
the rate of 15.9% for minor depressive disorder found in
the 321 subjects who completed the study to the 148 sub-
jects who screened positive for depression but were lost to
follow-up yields the estimate that a total of 76 individuals
in the original sample of 1,752 would have been diag-
nosed with minor depressive disorder. Thus, from these
results, one can extrapolate a base rate of 4.3% in the gen-
eral population.

Because we did not have information about those who
did not participate in the CEG telephone screening, a
weighting strategy using gender, age, and employment
status of those screening positive was used to estimate
the rate of depression in the entire positively screened
sample.21,22 This analysis resulted in a rate of 15.3% for
minor depressive disorder (compared to the 15.9% found
with the unweighted data). Applying the rate of 15.3% for
minimal depressive disorder in those who screened positive
for depression yields an estimate of a total of 73 individu-
als in the original sample of 1,752 who would have been
diagnosed with minor depressive disorder. Thus, from
these results, one can extrapolate a base rate of 4.2% in
the general population.

There were significant differences among the 4 CEG
mood module diagnostic categories of major depressive
disorder, dysthymia, minor depressive disorder, and no
depression diagnosis when the variables of age, smoking,
and perceived stress were examined. Comparing indi-
viduals younger than 60 years old ($n = 270$) to subjects
60 years or older ($n = 44$), there were differences in de-
pression categories ($\chi^2 = 11.89, P < .008$). The older
group had more minor depressive disorder (31.8% vs
13.3%) and less major depressive disorder (13.6% vs
28.9%) when compared to subjects less than 60 years of
age. When smokers and nonsmokers were compared in
the 4 diagnostic categories, there was a difference be-
tween groups ($\chi^2 = 18.67, P < .001$), with 50.0% of in-
dividuals with major depressive disorder, 32.3% with
dysthymia, 25.5% with minor depressive disorder, and
23.3% with no depression diagnosis who smoked.

There were no significant differences among the 4
CEG depression categories in the percentage of those
employed ($\chi^2 = 2.83, P > .41$; 70.2% of the total group
were employed), gender ($\chi^2 = 2.71, P > .43$; 76% of the
total group were female), or the use of alcohol ($\chi^2 = 7.32,
P > .07$; 33.5% of the total group were alcohol drinkers).

The analysis for experiencing stress over the last 4
weeks (a 5-point scale from 1 = none to 5 = severe) in-
dicated a difference in stress between groups with 1-way
analysis of variance ($F = 10.45, P < .001$). Post hoc tests
indicated that the major depressive disorder group
(mean = 4.38) experienced more stress than either those
with minor depressive disorder (mean = 3.76) or no de-
pression diagnosis (mean = 3.70). The group with dys-
thyemia (mean = 4.07) was not significantly different
from any of the other 3 groups. There were no significant
differences across diagnostic categories for variables of
gender, employment status, or alcohol use.

**DISCUSSION**

Using DSM-IV-TR research criteria in this study, mi-
nor depressive disorder appears to be a significant disor-
der in terms of both its frequency—1.5 times more preva-
ent than dysthymia alone—and its severity as measured
by the HDRS. The extrapolated prevalence of 4.2% is at
the lower end of the range reported in earlier studies.3,16,23
However, because our study design did not include fol-
low-up interviews of anyone who screened negative for
depression by the PRIME-MD PQ, this calculation may
underestimate the prevalence of minor depressive dis-
order because false negatives were not included in the
estimate.

When comparing prevalence rates of minor depressive
disorder, it may also be important to consider the age
distribution of the population. This study’s finding of sig-
nificantly more minor depressive disorder (31.8%) and
less major depressive disorder (13.6%) among elderly

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**Table 1. DSM-IV-TR Criteria for Minor Depressive Disorder**

- At least 2 (but less than 5) of the symptoms in Criterion A for a
  major depressive episode have been present during the same 2-week
  period and represent a change from previous functioning
- At least 1 of the symptoms is either:
  - Depressed mood most of the day, nearly every day, or
    Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day
  - There has never been a major depressive episode, and criteria are not met for dysthymic disorder
  - There has never been a manic episode, a mixed episode, or a hypomanic episode, and criteria are not met for cyclothymic disorder

2Adapted with permission from the American Psychiatric Association.13
individuals who screened positive for depression has been reported previously. Bruce et al outlined a successful treatment intervention for older individuals with major depression and minor depression accompanied by suicidal ideation. This is important, given the fact that suicide completion rates are highest in late life; the elderly should be carefully screened and monitored for depression.

The current study is limited by the final return rate of 67.1% due to the difficulty in reaching individuals by telephone to administer the CEG and HDRS. A limitation of the PRIME-MD in this study was that initial screening with the PRIME-MD PQ yielded a false-positive rate for depression of nearly 50%. However, previous studies using the same 2 PRIME-MD PQ questions to screen for depression have demonstrated a positive predictive value for major depression of 33% when used in written form and 18% when verbally administered. (The positive predictive value for major depressive disorder only in this study was 26.5%.) The positive predictive value (for PRIME-MD PQ questions 18 and 19) for combined major depression, dysthymia, and minor depression in these 2 previous studies was not reported. Arroll and colleagues defended the use of a depression screening instrument with a low positive predictive value (18%) in a “low prevalence” setting because of the ability a physician has to gather further data (the reference standard) or refer the individual to another health professional.

Another potentially useful technique to screen for depression in primary care settings may be to ask individuals a single question about their perceived level of stress over the preceding 4 weeks. Additional research would be needed to establish an appropriate threshold to identify individuals with dysthymia and minor depressive disorder as well as those with major depressive disorder. Physicians may also want to more closely monitor depression in individuals who smoke cigarettes, given the association between depression and smoking. Knowing an individual’s longitudinal course of depressive symptoms and current symptomatology could potentially facilitate more effective interventions in health behaviors such as smoking.

The current model of the minor depressive disorder group was indicative of mild depression and, interestingly, was very similar to the mean HDRS score of the group with dysthymia. This finding of similar symptom severity between minor depressive disorder and dysthymia is consistent with the report of Rucci et al that individuals with subthreshold depression experience...
significant psychological distress and disability that mirrors the lower quality-of-life indices seen in dysthymia.

The current longitudinal model used to understand major depressive disorder is one of fluidity, with phases of subthreshold symptoms and minor depressive episodes punctuating relatively symptom-free periods. Because of the cumulative effects of untreated depression, treatment guidelines stress the importance of treating depressive symptoms to remission when they occur.30

The present study suggests that minor depressive disorder is relatively common among primary care patients, especially the elderly. Because of the psychological distress associated with minor depressive disorder, it is important to identify and follow such individuals with a “watchful eye.” Among the more medically frail older population, coexisting depressive symptoms may also interfere with adherence to treatment recommendations for a variety of medical illnesses. Identification of minor depressive disorder in this population is important for primary care physicians to pursue. Gilbody et al31 in a recent review caution that depression screening cannot stand alone, but needs to be part of a comprehensive system-based approach, including careful patient follow-up and use of well-trained case managers.

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