

## Early detection of depression by primary care physicians

John W. Feightner, MD, MSc, FCFP; Graham Worrall, MB, BS, CCFP, MRCGP

The overall prevalence of depression is from 3.5% to 27%. The burden of suffering is high and includes death through suicide. In most cases treatment is effective, but important episodes of depression are being missed. To determine whether a brief, systematic assessment for the early detection of depression should be part of the periodic health examination we searched MEDLINE and the Science Citation Index for randomized controlled trials that evaluated the effectiveness of early detection of depression with a questionnaire. Seven instruments met our quality criteria: the Beck Depression Inventory, the Center for Epidemiologic Studies Depression Scale, the Zung Self-Assessment Depression Scale, the General Health Questionnaire, the Hopkins Symptom Checklist, the Mental Health Inventory and the Hospital Anxiety and Depression Scale. The four randomized controlled trials failed to provide adequate evidence of the benefit of routine screening. Early detection is difficult because of depression's natural history, the role of symptoms, the cultural diversity of Canada and how detection instruments have been developed. Depression deserves careful attention from primary care physicians; however, further research and development is required before the widespread routine use of any detection test can be recommended.

La morbidité estimative de la dépression dans l'ensemble de la population va de 3,5% à 27%. Cette maladie très pénible amène souvent le suicide. Le traitement est efficace dans la plupart des cas; cependant de graves épisodes dépressifs échappent au diagnostic. Afin de savoir si la visite médicale périodique devrait comporter la recherche systématique des symptômes précoces de dépression nous retraçons dans MEDLINE et Science Citation Index les études comparatives aléatoires de l'usage de questionnaires à cette fin. Nous retenons sept outils qui répondent à nos critères de qualité: le Beck Depression Inventory, la Center for Epidemiologic Studies Depression Scale, la Zung Self-Assessment Depression Scale, le General Health Questionnaire, la Hopkins Symptom Checklist, le Mental Health Inventory et la Hospital Anxiety and Depression Scale. Les quatre essais comparatifs aléatoires ne militent pas suffisamment pour le dépistage systématique. Le diagnostic précoce de la dépression est difficile vu le génie évolutif de la maladie, la variabilité de sa symptomatologie, la diversité culturelle du Canada et l'insuffisance des outils de dépistage. Si le médecin de première ligne doit être à l'affût de la dépression on ne peut lui recommander à cette fin l'emploi d'outils de dépistage qui ne seraient pas plus perfectionnés et fondés sur de meilleurs travaux de recherche que ceux dont on dispose actuellement.

**D**epression is common and can usually be treated effectively. However, in many cases physicians may not recognize depression, especially in its early stages. Because the burden of suffering can be high, including death through suicide, early recognition and treatment are worth while. Such efforts are not as easy as they seem, and evidence of their effectiveness must be evaluated.

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*Dr. Feightner is associate professor and research director, Department of Family Medicine, McMaster University, Hamilton, Ont.  
Dr. Worrall is a visiting lecturer in the Department of Community Medicine, Memorial University of Newfoundland, St. John's.*

*Reprint requests to: Dr. John W. Feightner, Department of Family Medicine, McMaster University, PO Box 2000, Stn. A, Hamilton, Ont. L8N 3Z5*

All physicians must be sensitive to verbal and nonverbal cues that might reflect an episode of depression. Whether a brief, systematic assessment for undeclared depression should be an integral part of the periodic health examination of asymptomatic patients has yet to be determined.

In 1979 the Canadian Task Force on the Periodic Health Examination stated that there was fair evidence to exclude early systematic assessments of depression from the periodic health examination.<sup>1</sup> In reassessing the situation 10 years later we paid particular attention to the quality of early detection instruments currently available, the evidence of the effectiveness of early detection efforts and the features that impede early detection.

## Burden of illness

Community surveys of the prevalence of depression have generated estimates of 3.5% to 27%.<sup>2,3</sup> Clearly, such estimates are affected by the choice of criteria defining depression, the population studied, the assessment methods and the time frame. Our understanding of the epidemiologic features of depression has improved considerably over the past decade.<sup>4</sup> Carefully performed surveys have suggested that 15% to 30% of adults experience clinically significant depression at some point in their lives.<sup>5</sup> The Epidemiologic Catchment Area Study,<sup>6</sup> a landmark survey involving over 18 000 people, identified a 6-month prevalence rate of 2.2% to 3.5% for major depression.<sup>7</sup> These data are supported by findings from studies in family practice<sup>8,9</sup> and ambulatory care<sup>10</sup> settings that showed depression ranking high among all conditions encountered.

The lifetime prevalence of depression is roughly twice as high for women as for men. The peak prevalence among women occurs between 35 and 45 years of age. Among men the prevalence increases with age. First-degree relatives of people with depression are more likely to become depressed.<sup>5,11</sup> In Canada in 1986 suicide accounted for an estimated 97 600 potential life-years lost among males and 25 300 among females, the associated direct and indirect costs being \$1.6 billion per year.<sup>12</sup> It has been suggested that identifiable depression is causally related to 60% of suicides.<sup>13</sup>

## Is depression being recognized?

Depressed patients may present with various complaints, which makes recognition a challenge, particularly in the early stages of depression. In one review of 400 depressed patients in a primary care setting, only 49% presented with a psychologic complaint.<sup>14</sup> In another primary care study<sup>15</sup> depression went unrecognized in about 50% of patients who

presented with nonpsychologic complaints yet who met the standardized clinical criteria for major depression.<sup>16</sup> However, although other studies have confirmed that depression is easily missed, they have suggested that many patients have self-limited mild depression.<sup>17-19</sup> Many overlooked cases may be identified subsequently; however, these data suggest potential benefit if an effective means of early recognition were available.

## Is effective treatment available?

Once recognized most cases of depression can be treated effectively. The mainstays of therapy have been tricyclic and "new-generation" antidepressants and psychotherapy. Tricyclic antidepressants have long been considered to be effective and to decrease somewhat the risk of early relapse.<sup>20,21</sup> Similar support exists for monoamine oxidase inhibitors,<sup>22</sup> but the potential side effects have limited their use. Psychotherapy, although widely practised and generally accepted as being effective, is more difficult to study, and the results of evaluations are often harder to interpret than those of drug trials. Most reviews of randomized controlled trials and meta-analyses, however, do support the effectiveness of psychotherapy.<sup>23-25</sup> Combined treatment with antidepressants and psychotherapy may produce better outcomes than either treatment alone.<sup>23</sup>

The use of lithium to treat bipolar disorders and the controversial role of electroconvulsive therapy will not be included in this review.

## Are there acceptable routine screening tests?

Instruments for routine case-finding in primary care settings must be of acceptable quality, brief and easy to use. Presumably the patients would complete the test while waiting to see their physician. Most self-administered tests have been designed for routine screening purposes and not as diagnostic aids. Some tests have been developed for settings in which the prevalence of depression is higher than in primary care. Because a lower prevalence decreases the positive predictive value, instruments may appear less effective when used in the primary care setting.

In reviewing the literature on self-administered instruments we applied the following criteria.

- Is there a sound conceptual basis on which the instrument was developed, and is this credible?
- Is it intended to detect solely depression or other emotional problems as well?
- Does it measure the severity of depression?
- Has it been tested across a broad spectrum of patients, especially those in primary care or in the community?

● Is it feasible and easy to apply in a clinical setting?

● Is there evidence to support its sensitivity to changes in clinical status?

● Is there evidence to support its reliability?

● Is there evidence that it is a valid measure for the early detection of depression?

A search of MEDLINE and the Science Citation Index identified six instruments that met those criteria sufficiently well to warrant a more in-depth review. A review by Wells<sup>26</sup> provided additional information.

### *Beck Depression Inventory (BDI)*

The BDI<sup>27,28</sup> was designed specifically for use in clinical settings to identify depression as well as to measure its depth. The test has been used in many different situations with people suffering from various disabilities. The original 21-item version has been scaled down to 13 items. It is generally self-administered, takes less than 10 minutes to complete and asks people to describe their emotional state during the previous week. The total score allows classification into five levels, from normal mental status to severe depression.

The methodologic properties have been extensively assessed, and the performance characteristics are quite good. The BDI is sensitive to change over time with treatment. Reliability studies have shown a coefficient  $\alpha$  of 0.73 to 0.92, and concurrent validity studies that compared the BDI with clinical ratings and other scales have shown correlation coefficients of 0.60 to 0.74.

### *Center for Epidemiologic Studies Depression Scale (CES-D)*

This instrument was developed to measure depressive symptoms in the general population.<sup>29</sup> It has been used in clinical settings as well. High scores reflect the distress that accompanies depression but are not diagnostic of depression. The 20-item scale is simple to understand and easy to administer.

The CES-D is sensitive to change in clinical status. Reliability studies have reported a coefficient  $\alpha$  of 0.84 to 0.90. Validity studies, in both clinical and community populations, have shown coefficients of correlation with other measures, including structured psychiatric interviews, of 0.51 to 0.89. In studies involving depressed patients the sensitivity has been as high as 91% and the specificity 56%. However, in the general population the sensitivity was only 64%. This relates in part to the instrument's ability to identify people with symptoms suggestive of psychologic distress rather than to detect clinical depression.

### *Zung Self-Assessment Depression Scale (SDS)*

This brief, self-administered instrument measures the presence and the severity of depressive symptoms but is not a diagnostic tool.<sup>30</sup> Although the SDS is popular there has been almost no empiric testing of the selected items. The heavy weighting of items addressing physical symptoms makes its use difficult among patients whose symptoms are caused by physical disorders.

The SDS is sensitive to change in clinical status, but its reliability has been inadequately evaluated. Validity studies comparing the SDS with other scales, as well as global ratings by psychiatrists, have revealed correlation coefficients of 0.40 to 0.80.

### *General Health Questionnaire (GHQ)*

This instrument, designed specifically to detect psychiatric disorders in primary care, has a subscore for depression.<sup>31</sup> It has been widely used in primary care settings. The original version had 60 questions, but shorter versions of 30, 28, 20 and 12 items have been developed. Areas assessed by the original version included depression and anxiety, social functioning, psychophysiological symptoms, general health and vague aches and pains.

The internal consistency of the GHQ has been from 80% to 90% and the coefficients of correlation with global clinical assessments of psychopathology 0.55 to 0.83. The overall sensitivity has been about 68% and the specificity 81%.

### *Hopkins Symptom Checklist*

The current 25-question version, shortened from the original 90-question version, measures only depression and anxiety and has been designed for use in primary care settings.<sup>32</sup> The original version was intended for use in studies of psychotherapy and chemotherapy among psychiatric patients. The instrument is sensitive to changes in clinical status. Studies assessing its measurement properties have demonstrated an internal consistency as high as 95%, and coefficients of correlation with psychiatrists' global ratings of severity of depression have been 0.70 to 0.77. The correlation has been shown to be lower for scores of severely depressed patients.

### *Mental Health Inventory (MHI)*

The MHI was developed to measure mental health in the Rand Health Insurance Experiment.<sup>33</sup> The original 38-question format has not been changed, and an extremely brief 5-question version is available. The internal consistency has been in the range of 96%. Although the MHI is not specific for

depression, studies have shown that it does predict the future use of mental health services.

### *Hospital Anxiety and Depression Scale (HADS)*

Designed for use in nonpsychiatric hospital clinics this brief scale identifies only depression and anxiety and measures their severity.<sup>34</sup> It consists of seven items for each component. Only psychiatric symptoms are targeted; thus, symptoms that might be attributed to physical or emotional problems are avoided. The sensitivity to change has not been assessed. Internal consistency has been 30% to 60%; coefficients of correlation with other instruments, as well as clinical assessment, have been as high as 0.79 for the depression component. Although short and feasible, the HADS has not been extensively tested or widely used in North America.

### **Effectiveness of early detection**

The critical question with any intervention for early detection and treatment is whether it does more good than harm as compared with the results of later diagnosis and intervention. The appropriate research tool for answering such a question is the randomized controlled trial. A MEDLINE search of the literature and subsequent secondary searches identified only four trials of sufficient methodologic quality. In each study the basic question was whether the routine testing of patients just before seeing their physician provided any benefit in terms of detection and management of depression beyond that achieved through the usual clinical evaluation. The evaluation of effectiveness incorporated the explicit criteria of Sackett, Haynes and Tugwell.<sup>35</sup>

In a study by Shapiro and associates<sup>36</sup> 1242 patients attending an inner-city primary care teaching facility over 4 months completed the GHQ while waiting to see their physician.<sup>36</sup> In addition, each patient underwent a structured interview (the Diagnostic Interview Schedule [DIS]<sup>6</sup>) at home within 2 weeks after visiting their physician. The 488 subjects (39%) with positive GHQ scores were randomly assigned to one of three groups: (a) no feedback to the physician, (b) provision of the GHQ results to the physician immediately after completion of the questionnaire and (c) provision of the DIS findings to the physician immediately after the interview. Of the patients with negative GHQ results 40% were randomly assigned to one of two groups: (a) no feedback and (b) provision of the findings to the physician immediately after the questionnaire. The GHQ and the DIS were repeated after a 6-month follow-up for 6 months.

The provision of GHQ information had no statistically significant effect on the physician's diag-

nosis. Among patients over 65 years of age there was a statistically significant increase in the detection rate. However, there was no ultimate effect on patient management, even in the elderly group. Shapiro and associates speculated that the GHQ data may have had a marginal impact for patients with low to medium GHQ scores when the physician was uncertain about the symptoms and complaints.

Hoepfer and collaborators<sup>37</sup> used the GHQ to screen 1469 patients in a Wisconsin primary care office over a 5-month period. The people were then randomly assigned to either a group in which the physician received the score at the end of the visit or one in which the physician received no information. Physicians completed a standardized record tailored to address mental health issues. Knowledge of a positive GHQ result had no effect on the rate of detecting psychologic distress. The GHQ identified 28% of the patients as having psychologic distress; however, only 16% were identified by the physicians. The impact on management and patient outcome was not assessed. Furthermore, there was no description of patient selection or an attempt to assess the bias of using a special record.

Zung and colleagues<sup>19</sup> asked 1086 patients over a 12-month period to complete the SDS in the waiting room of their family physician. Of the 143 patients (13%) with positive scores 102 were randomly allocated to a group in which the physician was immediately informed of the results and subsequently applied a structured interview during the patient's visit; the other 41 were allocated to a group in which the physician was not told of the results. At follow-up 4 weeks later the patients were reassessed with the SDS and the charts reviewed for indications that the physician suspected or was treating depression. Among those whose physician was notified of the results 68% had charts indicating physician awareness of depression, as compared with only 15% of those whose physician was not informed. After reassessment at 4 weeks 64% of the identified patients showed clinical improvement, as compared with 18% of those who were in the unidentified (and untreated) group.

Unfortunately, the study by Zung and colleagues has several major design flaws and provides inadequate evidence to support its conclusions. Not only was there insufficient validity testing of the SDS but also the study period was extremely brief. There was no indication of patient selection or of the proportion of patients who agreed to participate. Most important, there was a considerable loss to follow-up, so that the results represented only a small portion of the patients entered into the study.

In a rather complex study in Britain<sup>17</sup> a general practitioner had 1093 consecutive patients complete the GHQ in the waiting room before their visit. In

addition, the physician briefly assessed their psychologic status during the visit. For half the patients the physician reviewed the GHQ results at the end of the visit and extended the discussion as necessary. The others served as control subjects, the physician receiving no GHQ results. After 1 year all of the patients were asked to complete the GHQ again, underwent a brief clinical assessment and were interviewed to assess the duration and severity of any psychiatric symptoms during the preceding year. On the basis of these findings the patients were labelled (retrospectively) as having transient, mild or severe psychologic problems.

During the study period 16% of the patients were treated for new episodes of psychiatric distress without data from the GHQ. An additional 11% were identified as a result of the GHQ results and further discussion with the physician. Patients with severe problems diagnosed as a result of the GHQ results provided to the physician at the initial visit had lower GHQ scores at 1 year than the control subjects with severe problems.

Although the investigators viewed this approach as being beneficial, there were several methodologic flaws. The control subjects selected for comparison were identified retrospectively, whereas the treatment patients were selected prospectively. The outcome measures relied heavily on patient recall over the preceding 1 year. The methods used to assess the effect of management were relatively indirect.

Although these four trials represent the best evidence currently available, they fail to provide adequate evidence to support the benefit of routine screening for the early detection of depression.

## Special problems

The early detection of depression is much more complex and challenging than the detection of other conditions seen in the primary care physician's office. Perhaps the most significant reason for this is how the natural history of depression differs from that of most conditions for which there are effective measures for prevention or early detection. The successful early detection of diseases or of patients at risk for adverse events has generally involved conditions that follow a continuous or progressive course and are detectable in the presymptomatic phase. Examples are cervical cancer (the Papanicolaou smear), breast cancer (clinical breast examination and mammography) and hypertension (screening for elevated blood pressure). The natural history of depression is not one of a continuous, unresolving disorder with a defined and detectable presymptomatic phase. In many cases the depression progresses continuously, becomes severe and is readily detected clinically. However, in some cases of mild

and, indeed, more severe depression patients improve without specific intervention (or even recognition).

A second problem relates to the role that symptoms play in depression. The goal of early detection is to identify disorders in the presymptomatic stage. This is usually most successful when the condition has a relatively long presymptomatic stage, there are good objective confirmatory diagnostic tests and the symptoms often occur only at an advanced stage. In a sense depression has none of these three characteristics. It is diagnosed essentially on clinical grounds, the early stages are associated with symptoms (often nonspecific), and the "presymptomatic" stage (even if there is one) is not necessarily prolonged, at least relative to other conditions. Since many early symptoms of depression also occur in other conditions (both physical and psychologic) the early detection of depression becomes even more complicated. Therefore, the development of an effective, accurate instrument is extremely difficult.

As Canada becomes increasingly multicultural additional problems arise concerning the use of early detection tests. During their development most instruments are not evaluated across a variety of cultures. Because the presentation of depression and the significance of associated symptoms can vary between cultural groups the routine use of early detection instruments may be difficult for physicians who care for people of different cultural and ethnic backgrounds.

Finally, several problems remain with the detection instruments themselves. Few of those that have been more carefully developed are specific for depression. Those that do focus on depression often have important development and testing shortcomings. Several instruments have been designed to detect the early stages of psychologic distress but are not diagnostically specific for depression or do not assess its severity. In addition, with some instruments the patients' responses cannot easily be synthesized into a clinically useful score. Many tests do not achieve the sensitivity and specificity required to be considered successful.

## Conclusions

From the primary care physician's point of view the current situation is relatively clear-cut, though far from ideal. The available evidence does not support routine screening for the early detection of depression. In fact, studies that have evaluated the effectiveness of screening instruments in clinical practice tend to argue against their use at present. None the less, depression is an extremely important and common condition and deserves careful attention from primary care clinicians. The literature

indicates that important episodes of depression are being missed. Hence, the problem is far from resolved.

## Future directions

Clinicians must continue to be sensitive to and aware of the early stages of depression and carefully pursue their suspicions. Further research and development is required before the widespread routine use of even the best test can be recommended as part of the periodic health examination. Work is required in instrument development, particularly in light of the natural history of depression. Other avenues and approaches to early detection must be explored. Possibly the most useful approach would be a simple "diagnostic" test physicians could use in the office if they are concerned that a patient is in the early stages of depression. This may be more efficient than routine testing of all patients. Further work to improve the identification of people at high risk should have considerable benefit as well. Because early detection instruments may have some value in the elderly population<sup>36</sup> more studies to evaluate early detection and subsequent management in this age group may prove valuable.

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