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`Do you think you suffer from depression?' Reevaluating the use of a single item question for the screening of depression in older primary care patients

Liat Ayalon[1], Margalit Goldfracht[2] and Per Bech[3]

[1]Louis and Gabi Weisfeld School of Social Work, Bar Ilan University, Israel
[2]Clalit Health Care Services, Israel
[3]Department of Psychiatry, Frederiksborg General Hospital, Hilleord, Denmark
Correspondence to: L. Ayalon, E-mail: ayalonl@mail.biu.ac.il

Objectives: The majority of older adults seek depression treatment in primary care. Despite impressive efforts to integrate depression treatment into primary care, depression often remains undetected. The overall goal of the present study was to compare a single item screening for depression to existing depression screening tools.

Methods: A cross sectional sample of 153 older primary care patients. Participants completed several depression-screening measures (e.g. a single depression screen, Patient Health Questionnaire-9, Major Depression Inventory, Visual Analogue Scale). Measures were evaluated against a depression diagnosis made by the Structured Clinical Interview for DSM-IV.

Results: Overall, 3.9% of the sample was diagnosed with depression. The most notable finding was that the single-item question, 'do you think you suffer from depression?' had as good or better sensitivity (83%) than all other screens. Nonetheless, its specificity of 83% suggested that it has to be followed up by a through diagnostic interview. Additional sensitivity analyses concerning the use of a single depression item taken directly from the depression screening measures supported this finding.

Conclusions: An easy way to detect depression in older primary care patients would be asking the single question, 'do you think you suffer from depression?' Copyright © 2009 John Wiley & Sons, Ltd.

Key words: depression; diagnosis; older adults; primary care; psychometrics; screening
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Introduction

Depression is a common condition in older primary care patients, ranging from 4 to 29% depending on sample and assessment method (van Marwijk *et al*., 1994; Williams *et al*., 1995). Untreated depression has many negative consequences including increased morbidity and even mortality (Cuijpers and Smit, 2002); older adults diagnosed with depression are more likely to suffer from a variety of medical conditions and to have a much slower recovery from these medical illnesses (Williams *et al*., 1995). In addition, among older adults with depression, more severe course of medical illness as well as increased risk for suicide are substantial risks for death (Silverstone, 1990; Dennis *et al*., 2007). Depression also has major public health consequences. Older adults who suffer from depression are more likely to use health services and have a greater number of physician's visits, emergency room visits, longer hospital stays and lower productivity at work (Druss *et al*., 2000; Simon *et al*., 2000).

Research has shown that the majority of older adults prefer to receive their mental health treatment in primary care (Gum *et al*., 2006). Fortunately, both pharmacological and nonpharmacological techniques for the treatment of depression in primary care have a

strong evidence base (Mulsant *et al*., 2001; Arean and Ayalon, 2005). Nonetheless, depression in primary care often goes unrecognized and as a result is poorly treated (Williams *et al*., 1995). Hence, there is a clear need to identify appropriate screening tools of depression for easy and efficient use with older primary care patients. Good screening tools should be easy and quick to administer, so that the patient is able to complete the screening while waiting for his or her physician's appointment. Scoring should also be easy, so that physicians will actually use the measure. In addition, screening tools should be of high sensitivity, yielding as few false negatives as possible (i.e. individuals who have the condition should be identified as such). On the other hand, specificity (i.e. the number of true negatives detected) could be slightly lower, as these tools are considered the first line of screening and should be followed up by a clinical interview in order to better assess the presence of clinical depression (Arean and Ayalon, 2005).

Recently, there has been an increased interest in single-item or two-item measures for the assessment of depression (Whooley *et al*., 1997; Zimmerman *et al*., 2006; Vahter *et al*., 2007; Bech, 2008). One study in older adults found that a single item question was as accurate as the full 30-item Geriatric Depression Scale (Mahoney *et al*., 1994). Similarly, another study found that a simple question, such as, 'are you depressed?' outperformed both the Beck Depression Inventory and the Visual Analogue Scale and had a sensitivity and specificity of 100% (Chochinov *et al*., 1997). Yet, others found that the single item question missed about half the cases indicating that it would be a poor screening tool (Lloyd-Williams *et al*., 2003). Given these competing findings, the overall goal of the present study was to compare a single item screen to three common screening tools of depression in order to identify the most appropriate tool for screening purposes in primary care.

Methods

Sample and procedure

This study was approved by the Helsinki Committee of the Clalit Health Care Seek Fund. Data collection took place from May 2008 to February 2009. Participants were recruited in the waiting rooms of two primary care clinics run by the Clalit Health Services (the largest and most established seek fund in Israel, serving 53% of the population). One clinic was located in the centre and the other in the north of Israel. Trained research assistants approached patients in the waiting room and offered them to participate in the study. Participation was voluntary and no compensation was provided. All participants gave an oral informed consent prior to their participation in the study. All measures were administered in an interview format to assure understanding of the questions and to minimize missing values. All measures not previously available in Hebrew were back translated.

Measures

Demographic information. Age, gender, education and number of medical conditions (out of eight common conditions) were gathered based on self-report.

The Structured Clinical Interview for DSM-IV (SCID-I). The SCID-I is a semi-structured interview for making the DSM-IV Axis I diagnosis (First *et al*., 1997). It is considered the 'gold standard' for the diagnosis of mental illness. This measure was administered by two trained mental health graduate research assistants. Both completed a three-day training course in the administration of this measure. After observing the training tape and receiving instructions about the administration of the SCID-I, research assistants practiced the administration of the SCID-I in three mock interviews until adequate inter-rater reliability was established against a clinical psychologist with over 10 years of experience with the administration of the SCID-I. Only modules pertaining to the diagnosis of major depression or dysthymia were administered in the present study. The Hebrew version of the SCID was used (Shalev *et al*., 1996).

Single item depression screen. Participants were asked, 'do you think you suffer from depression?' Response option ranged from 1 = 'not at all' to 5 = 'certainly yes'. A score between 3 to 5 was considered as representing depression. This question was presented as part of the demographic questionnaire prior to all other questions concerning depression. In an additional sensitivity analysis, we also evaluated the single-items concerning depressed mood from the Patient Health Questionnaire-9 and the Major Depression Inventory, with a response greater than 1 or 2, respectively, indicating depression. We also evaluated the single item concerning depression from the SCID-I against the full SCID-I diagnosis.

The Patient Health Questionnaire (PHQ-9). This measure ranks each of the nine DSM-IV criteria on

a scale from 0 = 'not at all' to 3 = 'nearly every day' over the past 2 weeks. The measure has been widely validated for use in primary care (Spitzer *et al*., 1999). The measure was specifically designed for assisting primary care physicians diagnose depression. Major depression is indicated if either item one or two (i.e. anhedonia and depression) are scored 2 or 3 and a total of at least five items are scored as 2 or 3. Its reliability in the present study was .82.

The Major Depression Inventory (MDI). This measure is endorsed by the World Health Organization for use in primary care (Bech and Wermuth, 1998). In addition to estimating symptom severity, the MDI can generate either a DSM-IV or an ICD-10 diagnosis. The measure consists of 12 items, but only ten of these items are scored towards calculating a total score. Each item is scored on a scale of 0 = 'at no time' to 5 = 'all of the time'. A total score of 21 or higher is considered an optimal cutoff for the diagnosis of major depression in older adults, who usually present with a less severe but a more chronic course of depression. Reliability in the present study was .83.

The Visual Analogue Scale (VAS). The VAS consists of a ruler that runs from 1 = 'extremely bad mood' to 10 = 'extremely good mood' (Grunhaus *et al*., 2002). These verbal descriptions are complemented by appropriate facial expressions. The VAS is considered a simple and valid screen for depression. In the present study, a score of 7 or higher was considered depressed.

Statistical analysis

We first ran descriptive statistics. Next, we calculated sensitivity, specificity, positive predictive value and negative predictive value for the four screening tools relative to SCID-I diagnosis. In an additional sensitivity analysis, we evaluated the use of a single depression item from the PHQ-9, the MDI, and the SCID-I against the full SCID-I diagnosis.

Results

The sample consisted of 153 individuals at the average age of 75 (SD = 8.1). Of these, 91 (59.5%) were male. Mean level of education was 11.8 (SD = 3.1). The average number of medical conditions was 1.5 (SD = 1.2). Overall, 6 (3.9%) individuals received the diagnosis of either current major depression and/or dysthymia according to the SCID-I.

Table 1 Raw values of observed results based on the screening tools versus expected results based on the SCID-I ($n = 153$)

	Single item		PHQ-9		MDI		VAS		Single item-PHQ-9		Single-item MDI		Single item-SCID-I	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
SCID-1														
Positive	5	1	4	2	5	1	3	3	5	1	4	2	6	0
Negative	25	122	2	145	4	143	5	141	6	140	13	134	4	142

Table 2 Ability of the four screening measures to identify depression in older primary care patients relative to SCID-I diagnosis

	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
Single-item	83.3	82.9	17.0	99.0
PHQ-9	66.6	98.6	67.0	99.0
MDI	83.3	97.2	55.0	99.0
VAS	50.0	95.9	33.0	98.0
PHQ-9-single depression item	83.3	93.8	45.0	99.0
MDI-single depression item	66.6	91.6	23.0	99.0
SCID-I-single depression item	100.0	97.2	60.0	100.0

The most notable finding of the present study was that, the single-item question, 'do you think you suffer from depression?' had a sensitivity of 83%, failing to identify only one depressed patient. Yet, it had a relatively high number of false positives (25), resulting in only moderate specificity of 83% and low positive predictive value. Nonetheless, the sensitivity of the single-item question was comparable to the sensitivity of the MDI and even exceeded the sensitivity of commonly used measures such as the PHQ-9 or the VAS; using the PHQ-9 criteria for the diagnosis of major depression, the measure demonstrated a sensitivity of 66.6% and a specificity of 98.6%, failing to identify two depressed individuals as depressed. Although the VAS demonstrated adequate specificity (95.9%), it had a poor sensitivity and failed to identify three of the six depressed individuals in the present study.

In an additional sensitivity analysis, we evaluated the psychometric properties of a single depression item taken from the PHQ-9, MDI and the SCID-I against a diagnosis obtained by the full SCID-I. For screening purposes, the psychometric properties of the PHQ-9 single depression item outperformed the psychometric properties of the full scale, with a sensitivity of 83.3% and a specificity of 93.8%. The single MDI depression item in contrast, demonstrated a sensitivity of 66.6% and a specificity of 91.6%, whereas the single depression item from the SCID-I demonstrated a sensitivity of 100% and a specificity of 97.2%. See Tables 1 and 2 for details.

Conclusion

The overall goal of the present study was to evaluate the utility of a single-item question, 'do you think you suffer from depression?' relative to three common screening tools for depression in primary care. This study is unique because it comprehensively evaluates the use of several common screening measures against several single-item measures for the screening of depression in primary care. Our results indicate that the single item question represents the most parsimonious screening alternative by demonstrating adequate sensitivity. This single question had as good sensitivity or better than all three measures evaluated in the present study. Similar findings in support of the single item screen were obtained when the single depression item was taken from the PHQ-9, which in fact, outperformed as a screening tool relative to the full PHQ-9 measure. Furthermore, when the single depression item was directly taken from the SCID-I, its sensitivity was as high as 100%, similarly to past research (Chochinov *et al*., 1997). The one exception to the excellent psychometric properties demonstrated by the single depression items evaluated in the present study was the single depression item from the MDI. Unlike, the other three single depression items evaluated, the MDI does not specifically ask about depressed mood, but instead queries about low spirit or sadness within the past 2 weeks. This single depression item had a slightly lower sensitivity and specificity, suggesting that in order to identify depression an explicit query about the presence or absence of depression has to be made.

Nonetheless, it is important to note that the various screening tools evaluated in the present study have extremely important functions that cannot be fulfilled by a single depression item, such as the assessment of depression severity and the monitoring of symptoms over time. These functions were not evaluated in the present study. Hence, even though for screening purposes a single-item question that specifically addresses the presence or absence of depression would suffice, both the PHQ-9 and the MDI may be highly appropriate for these other purposes. It also is important to note that the single-item question had a relative high rate of false positives, suggesting that this single-item question has to be followed up by a more elaborated diagnostic procedure.

Research has shown that the majority of older adults with depression seek treatment in primary care (Callahan, 2001). Fortunately, both pharmacological

and nonpharmacological interventions for depression exist and there are now various successful algorithms for the integration of depression treatment within primary care (Unutzer *et al*., 2002; Krahn *et al*., 2006). Nonetheless, naturalistic studies continue to show that less than half of all depressed older adults are detected in primary care. Given the fact that the average time of physician visit is about 17 min (Tai-Seale and McGuire, 2008), this may not be surprising. However, the present study demonstrates that a simple question, such as, 'do you think you suffer from depression?' can easily identify the majority of older adults with the condition. Hence, the present study suggests that there is almost no excuse for the staggering rates of unrecognized depression in primary care. Thus, it still remains to understand why the detection rate of depression in primary care is low. Is it that physicians fail to ask this single-item question? Or are patients more hesitant to admit the answer to their physician than to a research assistant?

Conflict of interest disclosures

The project was funded by an Investigator's Initiated Research Grant from Lundbeck International given to Dr Liat Ayalon. Lundbeck International had no other involvement in the project concept of design or in this paper.

Per Bech has occasionally over the past 3 years until August 2008 received funding from and has been speaker or member of advisory boards for pharmaceutical companies with an interest in the drug treatment of affective disorders (Astra-Zeneca, Lilly, H. Lundbeck A/S, Lundbeck Foundation and Organon).

Key points

- There are many evidence-based treatments for depression in primary care, yet depression often goes unrecognized and untreated.
- Improving the detection of depression in primary care is important.
- Results concerning the detection of depression using a single item screener are mixed.
- The present study evaluates the use of single item screeners against a variety of screening methods and found that it is just as effective for the initial identification of possible depression as a full screen.

Author contributions

Ayalon facilitated the acquisition of data, analysis and interpretation of data and preparation of the manuscript. Goldfracht also helped in the acquisition of data, concept and design and critical revisions. Concept, design, analysis, and interpretation of data were done by Bech.

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