A single question to screen for major depression in the general population

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Abstract

Purpose: Major depression is frequent but underrecognized. Our objective was to investigate the usefulness of a single question as a clinical indicator for current major depressive disorder in the general population.
Methods: Data were drawn from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC). The NESARC is a survey of 43,093 adults aged 18 years and older residing in households in the United States. Odds ratios (OR), 95% confidence intervals (CIs), and test characteristics (sensitivity, specificity, positive and negative predictive values and positive likelihood ratio) of the question "During the past 4 weeks, how often did you felt downhearted and depressed?" for the detection of current DSM-IV major depressive disorder were determined.
Results: Participants who reported having felt downhearted and depressed "a little of the time," "some of the time," "most of the time" or "all the time" were more likely than participants reporting those feeling "none of the time" during the last 4 weeks to be diagnosed with current major depressive disorder (OR 4.15 [95% CI, 3.57–4.83]; OR, 9.23 [95% CI, 7.93–10.74]; OR, 23.97 [95% CI, 20.21–28.44]; and OR, 24.00 [95% CI, 19.08–30.18], respectively).
The likelihood ratio for a positive test ranged between 6.49 (5.89–7.14) and 8.07 (7.18–9.07), going from a 7.1% pretest probability of major depression up to 31.9% if the participant report having felt downhearted and depressed "most of the time" or "all the time" during the past 4 weeks.
Conclusion: The single screening question has potential for use in primary care settings.
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1. Introduction

Major depression is common in the general population but underrecognized. Less than half of patients with depression are correctly identified and even fewer are adequately treated [1,2]. Time is limited during a visit, and physicians may be reluctant to screen for depression with a time-consuming instrument [3]. Even though various self-administered questionnaires have been validated and constitute an efficient way to detect depression, clinicians have low rate of use of these [4]. The use of a single verbal question may improve screening for depression. Various verbally asked questions have been validated in primary or secondary care centers [5]. To our knowledge, no one has been validated in the general population.

We therefore used the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) to estimate whether a single question could be used to detect depression in the general population.

2. Materials and methods

2.1. Sample

We analyzed cross-sectional data from a population based national representative sample, the National Epidemiological Survey of Alcohol and Related Conditions [6] (NESARC). The NESARC is a face-to-face survey of 43,093 adults (response rate, 81%), aged 18 years and older from the civilian non-institutionalized population residing in the United States, conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) from 2001 to 2002. Recruitment and informed consent procedures received full ethical review and approval from the US Census Bureau and

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the Office of Management and Budget. The NESARC oversampled blacks, Hispanics, and young adults aged 18 to 24 years old. Data were adjusted for oversampling and household- and person-level non-response. The weighted data were then further adjusted to represent the civilian United States population based on the 2000 Census.

Characteristics of interviewers, training and field quality control have been described elsewhere [7]. Briefly, interviews were conducted by approximately 1800 professional lay interviewers from the US Bureau of Census. On average the interviewers had 5 years of experience working on census and other health-related national surveys. For quality control, regional supervisors re-contacted a random 10% to verify the accuracy of the interviewer's performance.

2.2. Measures

2.2.1. Single-item depression screener

The depression screener was based on question that asked "During the past 4 weeks, how often did you felt downhearted and depressed?" This item was used as a screener for depression on a 5-points scale (none of the time, a little of the time, some of the time, most of the time and all of the time). This question was embedded in the Short-Form 12-Item Health Survey (SF-12) questionnaire [8], a validated assessment of quality of life derived from the SF-36 [9] and developed to measure quality of life.

2.2.2. Current major depressive disorder diagnostic assessment

Current (past 12 months) depression was assessed with the National Institute on Alcohol Abuse and Alcoholism's Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV (AUDADIS-IV). A major depressive disorder was diagnosed when at least 2 weeks of persistent depressed mood was present, accompanied by a total of at least five or more of the 9 DSM-IV symptoms of major depression during the episode. Social and/or occupational dysfunction had also to be present during the disturbance. Episodes of DSM-IV major depression due to bereavement or physical illness were ruled out. The reliability of the AUDADIS-IV was shown to be high for major depressive disorder, with κ between 0.60 and 0.65 [10].

2.3. Statistical analyses

Prevalence of current major depressive disorder by answer to the screener question was calculated. Logistic regression was used to analyze the statistical significance of differences in current major depressive disorder by answer to the screener question ("all of the time," "most of the time," "some of the time," "a little of the time "and last, "none of the time"). Sensitivity, specificity, positive predictive value (PPV) negative predictive value (NPV) and positive likelihood ratio (LR) statistics were calculated for successively lower level of depression risk.

Sensitivity was calculated as the proportion of individuals with current major depressive disorder who were at a particular risk of depression level (i.e., rate of true positive). Specificity was calculated as the proportion of individuals without depression who were not at the particular risk of depression (true negative). The PPV, a conversion of the pretest probability (i.e., population prevalence for major depression) into post-test probability, was calculated as the probability that the participant was diagnosed with current major depression given that a particular level of depression risk was met. Conversely, NPV was calculated as the probability that a participant did not meet the criteria for current major depression given that a particular level of depression risk was not met. The LR was calculated as the ratio of the chance to meet the criteria for current major depression in participants who were at a certain level of depression risk relative to those who did not meet the criteria for current major depressive disorder.

Weighted estimates and SEs were computed using SUDAAN, version 10.01 (Research Triangle Park, NC). This software implements a Taylor linearization to adjust SEs of estimates for complex survey sampling design effects including clustering data.

3. Results

Data of 42,676 participants were available. Of these, 3115 were diagnosed with current major depression (adjusted prevalence: 7.13%).

Table 1 presents major depression prevalence by answer to the question "During the past 4 weeks, how often did you felt downhearted and depressed?" Participants who reported having felt downhearted and depressed "a little of the time," some of the time," "most of the time" or "all the time" were more likely than participants reporting those feeling "none of the time" during the last 4 weeks to be diagnosed with current major depression (OR 4.15 [95% CI, 3.57–4.83]; OR, 9.23 [95% CI, 7.93–10.74]; OR, 23.97

Table 1

Major depressive disorder by answer to the question "During the past 4 weeks, how often felt downhearted and depressed?"

During the past 4 weeks, how often felt downhearted and depressed? All: N = 42,676		Current major depressive disorder		OR (95% CI)
		No: 39,561 (92.87), no. (%)	Yes: 3115 (7.13), no. (%)	
None of the time	N = 22,127	21,712 (98.08)	415 (1.92)	1.00 (reference)
A little of the time	N = 11,305	10,457 (92.50)	848 (7.50)	4.15 (3.57–4.83)
Some of the time	N = 6,286	5351 (84.73)	935 (15.27)	9.23 (7.93–10.74)
Most of the time	N = 2,051	1417 (68.10)	634 (31.90)	23.97 (20.21–28.44)
All the time	N = 907	624 (68.08)	283 (31.92)	24.00 (19.08–30.18)