Brief Report

Validity of the Mood Disorder Questionnaire: A General Population Study

Robert M.A. Hirschfeld, M.D.
Charles Holzer, Ph.D.
Joseph R. Calabrese, M.D.
Myrna Weissman, Ph.D.
Michael Reed, Ph.D.
Marilyn Davies, Ph.D.
Mark A. Frye, M.D.
Paul Keck, M.D.
Susan McElroy, M.D.
Lydia Lewis, B.A.
Jonathan Tierce, C.Phil.
Karen D. Wagner, M.D., Ph.D.
Elizabeth Hazard, Ph.D.

Objective: This study tested the validity in the adult general population of the Mood Disorder Questionnaire, a screening instrument for bipolar I and II disorders. The Mood Disorder Questionnaire has been validated in a psychiatric outpatient study group.

Method: A total of 711 subjects (stratified by Mood Disorder Questionnaire score) were randomly selected from a group of 85,358 adult respondents in a nationwide epidemiological general population sample that was balanced for key demographic variables. Of these, 695 subjects received a telephone interview involving an abbreviated version of the Structured Clinical Interview for DSM-IV.

Results: A sensitivity of 0.281 and a specificity of 0.972 were obtained for the Mood Disorder Questionnaire.

Conclusions: The Mood Disorder Questionnaire is a useful screening instrument for bipolar I and II disorders in the community. The operating characteristics of the Mood Disorder Questionnaire in the general population differ substantially from its characteristics in outpatient psychiatric settings.

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Bipolar spectrum disorders, which include bipolar I, bipolar II, and bipolar not otherwise specified, have a prevalence ranging from 3% to 6.5% (1), a rate significantly higher than the 1% prevalence for bipolar I disorder. However, bipolar spectrum disorders are often unrecognized, resulting in substantial delays in diagnosis and appropriate treatment (2). A recent report in the *Journal* (1) described a screening instrument for bipolar I and II disorders, the Mood Disorder Questionnaire. The article presented data on the Mood Disorder Questionnaire's validation in a study group selected from psychiatric outpatient clinics. The Mood Disorder Questionnaire's operating characteristics in other populations have not been investigated.

The Mood Disorder Questionnaire was recently used to screen for bipolar I and II disorders in a large general population epidemiological study on the prevalence and burden of illness of bipolar I and II disorders in the community. One component of the study involved assessing the validity of the Mood Disorder Questionnaire in the general population, and this is the subject of the present article.

Method

Subjects for this study were a subset of respondents in a large general population epidemiological study of bipolar I and II disorders (the "prevalence study"). In the prevalence study, the Mood Disorder Questionnaire was mailed to a sample of 127,800 adults who were selected to match U.S. demographic variables. Details of the survey methods are described elsewhere (3). Of these, 85,358 (66.8%) were returned and usable for analysis.

The study group for the current study was a subset of the 85,358 respondents in the prevalence study. The target sample for the current study was 700 randomly selected subjects stratified by Mood Disorder Questionnaire score. Approximately 40 subjects were selected for each Mood Disorder Questionnaire score from 0 to 4, regardless of the additional criteria, and for each score of 5

through 13; approximately 40 were selected who met the remaining Mood Disorder Questionnaire criteria and 15 who did not.

The Mood Disorder Questionnaire is a self-report inventory that screens for bipolar I and II disorders with 13 yes/no items derived from both DSM-IV criteria and clinical experience (1). A positive screen requires that seven or more items be endorsed, that at least several of the items co-occurred, and that the symptoms caused at least moderate psychosocial impairment. The Mood Disorder Questionnaire was previously validated in a group of psychiatric outpatients (1). An abbreviated Structured Clinical Interview for DSM-IV (SCID) included lifetime modules for mood and substance use disorders as well as selected background information.

A team of 10 doctoral and two master's-level clinical and psychiatric research interviewers were recruited and trained to administer an abbreviated lifetime version of the SCID for Axis I Disorders (4). Each subject was contacted by survey staff and scheduled for the SCID as a computer-aided telephone interview. The interviewers were blind to the results of the initial Mood Disorder Questionnaire. The interviews were performed from April through June 2001. An institutional review board approved the study protocol, which included written informed consent obtained at the time of administration of the Mood Disorder Questionnaire. Data for the SCID interviews were captured directly into a database. The data were analyzed by using SAS 8.0 for Windows (SAS Institute Inc., Raleigh, N.C.).

Sensitivity and specificity were calculated for each possible Mood Disorder Questionnaire symptom cutoff score relative to a SCID diagnosis of bipolar I and II disorders as a diagnostic standard and were plotted as a receiver-operating-characteristics curve. Results were weighted by group stratum back to the initial responder group of 85,358. Sensitivity was the proportion of cases with SCID diagnoses of bipolar I and II disorders correctly diagnosed by the Mood Disorder Questionnaire, and specificity was the proportion of individuals without bipolar disorder who were correctly identified as such by the Mood Disorder Questionnaire.

Results

A total of 711 subjects were identified by National Family Opinion as meeting the study entry criteria. Of these, 12 refused the reinterview. An additional two had incomplete data and were not included in the analyses. A total of 695 subjects were left who completed the telephone research interview and whose data were complete for analyses. The sample's mean age was 46.1 years (weighted). A total of 95% (weighted) reported high school completion or the equivalent. A total of 89% (weighted) were white non-Hispanic, 5% were black non-Hispanic, 2.3% were Hispanic, and the remainder of subjects were of other ethnic backgrounds.

The frequency of endorsement of Mood Disorder Questionnaire items ranged from 7.3% to 36.0%, weighted, with the highest item endorsements given to "irritable" (36.0%), "easily distracted" (31.6%), and "confident" (31.09%). A Cronbach's alpha coefficient of 0.84 was achieved for the Mood Disorder Questionnaire's symptom items. Individual item correlations with total symptom score on the Mood Disorder Questionnaire ranged from 0.36 to 0.63 (weighted).

Seventy-eight respondents met the criteria for lifetime bipolar spectrum disorders, with 70 having bipolar I and eight having bipolar II. The weighted lifetime prevalence of bipolar spectrum disorders was higher in women (3.2%) than in men (0.9%) and varied with age: 18–29 years=2.9%, 30–39 years=3.0%, 40–49 years=1.5%, 50–59 years=3.9%, and 60 years or older=0.1%.

A number of the subjects reported substance abuse, with 2.1% (weighted) reporting abuse in the past month and 9.4% in the past. Alcohol abuse was present in 1.5% during the past month and 9.4% in the past. Drug abuse was present in the past month for 1.9% and 2.1% in the past. Subjects who had past (7.7%) or current (3.3%) substance abuse were much more likely to have bipolar spectrum disorders than those with no substance disorder (1.5%).

In order to evaluate the sensitivity and specificity of the Mood Disorder Questionnaire, the initial Mood Disorder Questionnaire administered by questionnaire was compared to the SCID diagnosis obtained from the telephone reinterview. Using the standard scoring, requiring seven or more symptoms, with clustering and moderate or worse problems deemed positive, the Mood Disorder Questionnaire correctly identified as positive 28.1% (weighted sensitivity) of those with SCID diagnoses of bipolar spectrum disorders. On the other hand, the Mood Disorder Questionnaire identified 97.2% of the SCID individuals without bipolar disorder as not bipolar (weighted specificity).

Discussion

This study assessed the sensitivity and specificity of the Mood Disorder Questionnaire as a screening instrument for bipolar spectrum disorders in a general population sample. Against a SCID diagnosis of bipolar I or II by trained research interviewers used as the "gold standard," the sensitivity was 28.1% and the specificity was 97.2%. The sensitivity was considerably less than that found in the psychiatric outpatient group. This is not unexpected because the test-retest reliability (or kappa) of the SCID in the general population is approximately 0.5 for all diagnoses but was indeterminable (because of low frequency) for bipolar disorder (5), so the sensitivity of the Mood Disorder Questionnaire against the SCID cannot be higher than 0.4. Although this is less than ideal, it may represent the state of the field and will identify three of 10 positive cases in the community. The high specificity means that it will effectively screen out nearly all true negatives.

The relatively low frequency of SCID-diagnosed bipolar II subjects compared with bipolar I is surprising. We expected that the frequencies would be similar. Whether this is due to an insensitivity of the SCID to bipolar II or to a differential prevalence is the subject of an ongoing investigation.

Received Dec. 6, 2001; revision received June 7, 2002; accepted July 25, 2002. From the University of Texas Medical Branch, Galveston; Case Western Reserve University School of Medicine, Cleveland; the College of Physician & Surgeons, Columbia University, New York; Vedanta Associates Inc., Chapel Hill, N.C.; the University of California–Los Angeles; the University of Cincinnati College of Medi-

cine, Cincinnati; the National Depressive and Manic-Depressive Association, Chicago; and Epinomics Research, Inc., Arlington, Va. Address reprint requests to Dr. Hirschfeld, Department of Psychiatry and Behavioral Sciences, University of Texas Medical Branch, 1.302 Rebecca Sealy, 301 University Blvd., Galveston, TX 77555-0188; rohirsch@utmb.edu (e-mail).

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