Taylor & Francis healthsciences

Adaptation of revised Brief PHQ (Brief-PHQ-r) for diagnosis of depression, panic disorder and somatoform disorder in primary healthcare settings

AYTÜL ÇORAPÇIOĞLU AND GÜLCAN UZUNER ÖZER

Department of Psychiatry, Kocaeli University Medical School, Kocaeli, Turkey

Correspondence Address
Aytul Corapcioglu, MD, Tophanelioglu Cad. Petek Sitesi A5 Blok D.9, Altunizade, Istanbul, Turkey
Tel: +(90) 216 339 00 55
Fax: +(90) 216 339 00 56
E-mail: aytul@mail.koc.net

Received 19 June 2003; accepted for publication 10 November 2003

OBJECTIVE: ***The aim of this study was to determine the diagnostic accuracy of the Turkish version of the revised Brief Patient Health Questionnaire (Brief PHQ-r) in depression, panic disorder and somatoform disorder, in primary care settings.***

METHODS: ***This was a cross-sectional study with blinded psychiatric evaluation. The study was conducted at three sites which provide primary health services. Total number of the participants was 1556. Of these, 1387 comprised the analysis population. Diagnoses of depression, panic disorder and somatoform disorder made according to the patient's responses to the questions on Brief PHQ-r form were compared with the diagnoses made by psychiatrists using DSM-IV.***

RESULTS: ***Diagnostic performance parameters of Brief PHQ-r were calculated. Main results are as follows: for any diagnosis $\kappa = 0.567$, sensitivity 79.0%, specificity 82.9%; for major/minor depressive disorder $\kappa = 0.536$, sensitivity 76.0%, specificity 85.3%; for panic disorder $\kappa = 0.640$, sensitivity 74.4%, specificity 98.4% and for somatoform disorder $\kappa = 0.476$, sensitivity 61.9% and specificity 92.5%.***

CONCLUSIONS: ***Diagnostic performance of Brief PHQ-r was found to be quite good in the diagnosis of major/minor depressive disorder, panic disorder and somatoform disorder, in primary healthcare settings. We recommend its use in routine clinical practice in order to help primary healthcare physicians, and also in field surveys on psychiatric disorders.***
(*Int J Psych Clin Pract* 2004; **8:** 11–18)

Keywords
primary healthcare
Brief Patient Health Questionnaire (Brief-PHQ)
somatoform disorder
diagnostic test
major/minor depressive disorder
panic disorder

INTRODUCTION

Various questionnaires and scales are used to help primary care physicians to make correct and rapid diagnoses and to detect the presence of psychiatric symptoms reliably in studies concerning psychiatric disorders. Structured interviews are important means to validate the diagnostic approach in medical fields that have no definite diagnostic symptoms, such as psychiatry. Structured interviews seem particularly helpful for primary care physicians as their time is limited by their workload, and they may not know the appropriate questions for accurate evaluation of psychiatric disorders.[1–3]

In primary care services, mental disorders are commonly encountered, they cause disability, their cost to society is high and they are treatable. Despite these facts, they are still not recognized adequately, and as a result they are not treated appropriately.[4,5] Several scales have been developed for diagnosing mental disorders that are common in the primary care settings.[6,7] Among these, Prime-MD (Primary Care Evaluations of Mental Disorders), a diagnostic scale, was first developed by Spitzer et al,[8] and an adaptation has been studied for use in Turkey.[9] Prime-MD consists of two parts.

DOI: 10.1080/13651500310004452

The first part, the *patient questionnaire*, is a self-assessment scale of 26 questions that is completed by the patient. If the responses warrant, or if the clinician finds it necessary, another form, the *clinician evaluation guide*, which evaluates mood disorders, anxiety disorders, alcohol abuse and addiction and somatoform disorder, is completed by the clinician. In the adaptation study for Turkey, the average time required to complete Prime-MD was 7.5 min. The previous screening tests could help general practitioners only in indicating the possibility of a psychiatric disorder, but contained no way of confirming the diagnosis. In contrast, Prime-MD is a clinician-evaluated instrument, which leads to a definite diagnosis in the disorders concerned. However, it consists of two forms, requires prior training for its administration and contains some diagnostic categories such as partial remission or recurrence of major depressive disorder, hypochondriasis, etc., which may be relatively complex for the primary care physician. Thus its use in primary care settings is limited.[10–13]

Spitzer and colleagues have converted Prime-MD, which consists of two phases, one self-report and the other the clinician's evaluation, to a Patient Health Questionnaire (PHQ), which is entirely a self-report scale.[14] The aim was to have the patient answer the questions by her/himself, with assistance only when she or he has difficulty in reading or understanding. The clinician reviews the form completed by the patient, checks the positive answers and makes a diagnosis following the diagnosis algorithm given at the bottom of the page (it is not appropriate to make a diagnosis using the answers given in the module on somatoform disorders, the physician should use her/his own clinical judgement to decide whether the physical symptoms are caused by an organic disorder or not).

PHQ consists of four pages. Along with the diagnostic questions concerning depression, somatization and anxiety, this instrument also contains data gathering non-diagnostic questions on biological factors (such as menstruation, pregnancy, childbirth) and psychosocial stressors which may have caused these disorders. However, the patients are not obliged to fill all of the pages. They may only answer questions about the disorders and leave out the ones on psychosocial stressors (the first three pages), or they may fill only the first two pages, which contain the questions on panic and mood disorders. Along with diagnoses corresponding exactly to the DSM-IV disorders, this instrument covers some subthreshold diagnoses, which do not fulfill the DSM-IV diagnostic criteria,[15] but however cause distress and functional impairment in the patients and necessitate treatment (such as major depressive disorder, panic disorder).

Brief-PHQ is a two-page instrument that was modified from PHQ, and it consists of general questions concerning depressive mood, anxiety, psychosocial stresses and obstetrical/gynecological states (such as menstruation, pregnancy).

Since somatoform disorder is quite prevalent in primary care settings in Turkey, the first section of the PHQ (somatoform disorder) was merged with the first page of the Brief PHQ (including depression and panic disorder) to construct an instrument (revised Brief PHQ: Brief PHQ-r) for diagnosis of depression, panic disorder and somatoform disorder. The aim of this study is to determine the diagnostic accuracy of the Turkish version of Brief PHQ-r in depression, panic disorder and somatoform disorder in primary care settings.

METHODS

Field Study Phase

The study was conducted at three sites which provide primary health services in Izmit, Turkey, between October 2000 and February 2001. During the study period, two psychiatrists participating in the study visited the primary care centers two or three times a week in alternate fashion, and examined the patients who have completed the forms. The patient group consisted of literate people between 18 and 65 years of age, who had presented to the center with a health problem and accepted to participate in the study after being informed verbally. First, the subjects answered the questions in the Brief PHQ-r questionnaire and handed them over to the primary care physicians. Then, on the same day, they were examined by a psychiatrist participating in the study who was blinded to the answers in the Brief PHQ-r form. The psychiatrist who was trained in the disorders and subthreshold diagnoses which were included in the Brief PHQ-r, conducted a formal interview with the patients and made a diagnosis according to the DSM-IV.[15]

Number of Patients

It is known that, in the general population, the point prevalence rates for major depression, panic disorder and somatization disorder are 10–15, 2–4 and 8–10%, respectively.[16] To test the validity of the Brief PHQ-r, it was accepted that 30 subjects from each disorder group would be sufficient to estimate the sensitivity and specificity reliably; thus, in order to find 30 patients for the panic disorder group which had the lowest prevalence among others, screening was planned to cover 1500 individuals (bearing in mind a pessimistic estimate of 2% prevalence).

The first patient participated in the study on 7 October 2000, and the last patient on 12 February 2001. The total number of participants was 1556; of these, the forms of 1533 patients were valid, and 1387 individuals had an interview with a psychiatrist.

Development of the Instrument

The Brief PHQ-r scale was developed by taking the Brief PHQ as a model.[8] The Patient Health Questionnaire (PHQ), which was originally a four-page instrument, is an instrument that gathers the patient responses in order to help the clinician diagnose depression, panic disorder, other anxiety disorders, somatization disorder, eating disorders, alcohol abuse and

gives a general idea on mental health. The Brief PHQ, which is the brief form of this instrument, is a questionnaire that allows the clinician to diagnose major depressive disorder, minor depressive disorder, and panic syndrome by reviewing the responses of the patient. Taking into consideration that general somatic symptoms due to psychological problems are common in Turkey, we have included the somatoform disorder module from PHQ and added four questions concerning somatoform disorder, which were designed for inquiring whether the physical symptoms belonged to an organic disorder or not (see the Appendix for a list of questions included in the questionnaire).

Since similar questions are included in the Prime-MD, the adaptation of which into Turkish was done previously, the language and cultural adaptation of Brief PHQ-r and verification of the translation were not conducted in this study. The Turkish version of the Brief PHQ-r is called KISA, which are the initial letters of the Turkish translation of the words "Brief Patient Health Questionnaire".

Parts of Brief PHQ-r Questionnaire (See Appendix)

Somatoform disorder

The first part of the Brief PHQ-r form consists of 13 questions in total, concerning the diagnosis of somatoform disorder. The answers are listed in a three-level ordinal scale: "Not bothered", "bothered a little" and "bothered a lot". In addition, the history of consulting a doctor for complaints suggestive of an organic disorder and four additional questions have been added concerning previously diagnosed organic disorders. When at least three of all the questions (a–m) are positive (an answer as "bothered a lot" is accepted as a "positive" response) and there are no organic disorders, a diagnosis of somatoform disorder is made.

In patients who have organic disorders, the symptoms reported to be related to or caused by the organic disorder by the patient are excluded, and evaluations are based on other existing symptoms. For instance, if a patient with high blood pressure reports three positive symptoms among 13 symptoms, according to Brief PHQ-r criteria (see the previous paragraph) she/he is diagnosed as having "somatoform disorder"; however, when one of these 3 symptoms is "headache", the number of positive symptoms is considered to be 2, and Brief PHQ-r diagnosis will be as "There is no somatoform disorder".

Depressive disorders

The second part of the Brief PHQ-r scale consists of nine questions concerning the diagnosis of depressive disorder. The answers are listed as a four-level ordinal scale: "not at all", "several days", "more than half the days" and "nearly every day". A diagnosis of major depressive disorder is made when at least one of the first two questions (a and b) and at least five of all questions (a–i) are answered "positively" (a response is considered positive when the items of "more than half the days" or "nearly every day" are chosen). A diagnosis of minor depressive disorder is made when at least one of the first two questions (a and b) and two to four of all the questions (a–i) are answered "positively".

Panic disorder

The third part of the Brief PHQ-r form consists of five questions concerning the diagnosis of panic disorder. The responses are evaluated on a dichotomy scale as "Yes" or "No". In case of all questions (a–e) being answered as "Yes", a diagnosis of panic disorder is made.

Functioning of the patient

The clinical significance of the existing symptoms is investigated with one last question added to the evaluations: "Has any of the recalled problems affected your relations with other people, and your responsibilities at home and at work? If yes, to what extent?" The response to this question is evaluated in order to determine the necessity of treatment. Since symptoms of mental disorders may appear with varying frequency and severity in the daily life of healthy people, a significant degree of distress and functional impairment is required for the diagnosis of a mental disorder. In psychiatric settings, the patients are already under treatment for these disorders, so it is not a difficult decision. This criterion is more important in settings where the patients are not described as "psychiatric patient" (primary care health services, etc.) and their assessment is more difficult. It should be noted that there are two factors, each of which is enough on its own for clinical significance: distress and functional impairment. Search for treatment is a definite proof of distress and functional impairment. Functional impairment may include consequences such as skipping school or work, or worsening of interpersonal relationships.

Statistical Analysis

In order to determine the validity of Brief PHQ-r, the diagnoses of the four disorders (major depressive disorder, minor depressive disorder, panic disorder and somatization disorder) made according to the patient's responses to the questions in Brief PHQ-r form were compared with the diagnoses made by psychiatrists using the DSM-IV. The assessment of the patients by a psychiatrist blinded to the responses given to Brief PHQ-r form enabled us to estimate the utility (sensitivity and specificity) of the test for the healthy and sick populations and diagnostic possibility according to the test results (the positive and negative predictive values of the test). Also, the concordance of the diagnosis made by the Brief PHQ-r and the diagnosis made by a mental health professional was studied by calculating κ statistics. Kappa is a measure of interrater agreement/concordance beyond chance. It can take values between -1 and $+1$. Kappa values greater than 0.75 indicate excellent concordance, values between 0.40 and 0.75 indicate fair to good and values below 0.40 indicate poor concordance.

Table 1
The prevalence of the disorders in the study population (n = *1387*)

	No.	*%*	*(95% CI*)*
No diagnosis	1030	74.3	(71.9–76.5)
Single diagnosis	288	20.8	(18.7–23.0)
Two diagnoses	55	4.0	(3.1–5.1)
Three diagnoses	14	1.0	(0.6–1.7)
Depressive disorder (Major+Minor)	267	19.3	(17.3–21.4)
Major depressive disorder	91	6.6	(5.4–8.0)
Minor depressive disorder	176	12.7	(11.0–14.6)
Panic disorder	39	2.8	(2.1–3.8)
Somatoform disorder	134	9.7	(8.2–11.3)

*95% confidence interval.

RESULTS

Forms from 23 of 1556 subjects were rendered invalid since the names of the patients were not given. Of the 1533 subjects whose forms were valid, 146 did not accept to participate in an interview with a psychiatrist. Consequently, the statistical evaluation included 1387 subjects who completed the Brief PHQ-r form and who were assessed by a psychiatrist.

Five hundred thirty of the participating subjects were female (38.2%), and 857 (61.8%) were male. The average age of the subjects was 28.9 years, and standard deviation was 10.2 years. The major health problems were disorders of gastrointestinal system (27%), cardiovascular system (18%), upper respiratory system (18%) and musculoskeletal system (16%).

When the results of the interviews of 1387 subjects carried out by a psychiatrist were assessed according to DSM-IV diagnostic criteria, 74.3% of the population did not receive any diagnosis. Major depressive disorder was diagnosed in 6.6% of the subjects, and the prevalence of minor depressive disorder was 12.7%, thus overall rate of depressive disorders was 19.3%. (All prevalences reported throughout the manuscript are "point" prevalences.) The prevalence of panic disorder was 2.8%, whereas the prevalence of somatoform disorder (patients who had generalized somatic symptoms that cause functional impairment in the absence of an organic disorder, were considered to have a somatoform disorder by the clinician) was found to be 9.7% (Table 1). The prevalences of these disorders in gender and age subgroups are shown in Figure 1.

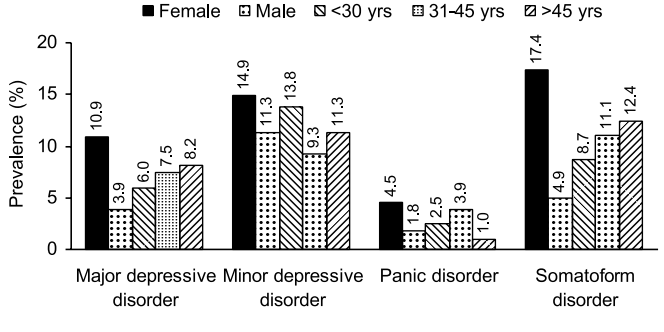

Figure 1 *The prevalences of major depressive disorder, minor depressive disorder, panic disorder and somatoform disorder in gender and age subgroups*

The evaluations carried out by psychiatrists revealed that 20.8% of the subjects had a single diagnosis, 4% had two diagnoses and 1% had three diagnoses. The most prevalent comorbidity was minor depressive disorder+somatoform disorder ($n = 27$, 1.9%). Other comorbidities were as follows: major depressive disorder+somatoform disorder ($n = 19$, 1.4%); major depressive disorder+panic disorder+somatoform disorder ($n = 10$, 0.7%); and other rare comorbidities each in two to four subjects (0.1–0.3%).

The diagnostic performance of the Brief PHQ-r for any diagnosis was as follows: $\kappa = 0.567$, with 79.0% sensitivity and 82.9% specificity values, which was quite good (Table 2).

The diagnostic performance of the Brief PHQ-r for depressive disorder was as follows: $\kappa = 0.536$, with 76.0% sensitivity and 85.3% specificity values, which was quite good. When major and minor depressive disorders were considered separately, the diagnostic performance of the Brief PHQ-r for major depressive disorder was comparable to depressive disorders as whole and was quite good (Table 2).

The performance of the Brief PHQ-r for panic disorder was very good. Especially, its high psychiatrist-test concordance ($\kappa = 0.640$) and very high specificity (98.4%) rendered this instrument quite useful for making diagnosis (Table 2).

The diagnostic performance of the Brief PHQ-r for somatoform disorder was quite good with psychiatrist–test concordance ($\kappa = 0.476$) with 61.9% sensitivity and 92.5% specificity values (Table 2).

The evaluations performed in order to see if the psychiatrist–Brief PHQ-r concordance still persisted for patients with more than one diagnosis revealed that 69 patients had more than one diagnosis. The degree of concordance between the psychiatrist's assessment and the Brief PHQ-r diagnoses in this subgroup was moderate and was statistically significant ($\kappa = 0.489$, standard error = 0.023, $P < 0.001$) (Table 3).

DISCUSSION

The Brief PHQ-r is a self-report scale, developed to help general practitioners diagnose common psychiatric disorders, especially depression, anxiety disorders and somatoform disorders in the primary care setting. This is the first diagnostic self-report instrument designed for general practitioners.[8] It includes algorithms designed to aid the physician. When compared to the Prime-MD which includes 18 diagnoses in total, of which nine are subthreshold, the Brief PHQ-r includes two subthreshold diagnoses (minor depressive disorder, somatoform disorder) and aims at revealing the

Table 2
Test-psychiatrist concordance, sensitivity, specificity, positive and negative predictive values

Disorder	Prevalence [% (95%CI*)]	κ	SE**	P value***	Sensitivity (%)	Specificity (%)	Overall accuracy (%)	Positive predictive value (%)	Negative predictive value (%)
Any diagnosis	25.7 (23.5–28.1)	0.567	0.024	<0.001	79.0	82.9	81.9	61.6	91.9
Depressive disorder (Major+Minor)	19.3 (17.3–21.4)	0.536	0.027	<0.001	76.0	85.3	83.5	55.2	93.7
Major depressive disorder	6.6 (5.4–8.0)	0.451	0.040	<0.001	71.4	91.9	90.6	38.2	97.9
Panic disorder	2.8 (2.1–3.8)	0.640	0.060	<0.001	74.4	98.4	97.8	58.0	99.3
Somatoform disorder	9.7 (8.2–11.3)	0.476	0.037	<0.001	61.9	92.5	89.5	46.9	95.8

*95% confidence interval.
**Standard error for κ.
***P value of the hypothesis that κ is different than zero.

diagnoses of the three most frequently encountered disorders in daily life or the most disabling mental disorder categories.

In a study performed on primary care patients in Saudi Arabia, where prevalence rates of depression and somatoform disorder are very similar to the Turkish population, the Arabic version of the PHQ was found to be quite concordant with diagnosis of mental health professionals (for both depression and somatoform disorder $\kappa = 0.65$). On the other hand, the κ value for anxiety has been reported to be weak ($\kappa = 0.37$).[17] In another study, the diagnostic performance of the Spanish version of the PHQ for any disorder was found to be good, with $\kappa = 0.74$, sensitivity 87% and specificity 88%.[18]

In our study, the prevalence rate for "any diagnosis" including depressive disorder, panic disorder and somatoform disorder was found to be 25.7%. The prevalence rates for major depressive disorder and minor depressive disorder were found to be 6.6 and 12.7%, respectively. When the two depressive disorders were taken together, the prevalence of depression in the study population increased to 19.3%. The prevalence rates of panic disorder and somatoform disorder were found to be 2.8 and 9.7%, respectively. These figures were similar to the prevalence rates found in studies on similar populations in Turkey[3,9,19–21] (Table 4).

When the diagnostic performance parameters are assessed, the Brief PHQ-r is a successful instrument in the field of major depressive disorder, with high sensitivity, specificity and accuracy rates (Table 2). All these parameters are very similar to the figures obtained with the original instrument, the PHQ (Table 5). Compared to Prime-MD, the Brief PHQ-r has almost the same specificity, and even higher sensitivity and accuracy rates. The reason for this may be the fact that the Prime-MD is an instrument with dichotomy responses as "yes or no" and, as written in the instructions for the patient, it requires the existing symptom to be present "nearly every day for more than half of the day". Consequently, although these symptoms affect her/his life and a clinician's evaluation would be in favor of depression, the patient is forced to check the answer "no" and, therefore, cannot have a diagnosis of depression. In contrast, the Brief PHQ, which

Table 3
Test–psychiatrist concordance when more than one diagnosis is made

		Number of diagnoses made by a psychiatrist				
		No diagnosis (%)	Single diagnosis (%)	Two diagnoses (%)	Three diagnoses (%)	Number of patients
Number of diagnoses according to Brief PHQ-r	**No diagnosis (%)**	82.9	25.0	5.5	0.0	929
	Single diagnosis (%)	15.0	59.7	23.6	14.3	341
	Two diagnoses (%)	2.0	12.2	65.5	35.7	97
	Three diagnoses (%)	0.1	3.1	5.5	50.0	20
	Number of patients	1030	288	55	14	1387

Note: the psychiatrist diagnoses were taken as denominator for the percentages given in the table.

Table 4
The prevalence rates of depression, panic disorder and somatoform disorder in primary care settings in Turkey

	Depression (%)	*Panic disorder (%)*	*Somatoform disorder (%)*
Rezaki et al (3)	26.3	0.5	4.8
Rezaki and Rezaki (19)	33.6	0.8	6.1
Çorapçıoğlu (9)	22.6	4.8	11.7
Özkürkçügıl Çorapçıoğlu (20)	29.6	3.5	7.4
Sağduyu et al (21)	23.2	–	–

does not limit the answers to "yes/no", allows the existing symptoms to be evaluated more easily, which in turn might increase the sensitivity of the test considerably.

When depressive disorders are taken as a whole, the Brief PHQ-r appears to be a diagnostic instrument with quite high rates of sensitivity, specificity and accuracy parameters. These parameters are similar to the PHQ, the sensitivity is higher than the PHQ, but the specificity is lower (Table 5).

The Brief PHQ-r is found to be a quite successful instrument for the diagnosis of panic disorder, with high sensitivity, specificity and accuracy rates (Table 2). Specifically, the very high specificity rates (with Brief PHQ-r 98.4% and PHQ 99%) show that these tests have a very high performance to rule out diagnoses and can be used easily at the primary care setting where all kinds of patients are seen.

With its high specificity but intermediate sensitivity, the Brief PHQ-r is a useful instrument to exclude diagnosis, but not helpful for diagnosing somatoform disorder (Table 2). Compared to Prime-MD, its sensitivity and accuracy is much higher (Table 5). It is recommended that, when the Brief PHQ-r is used diagnostically, the primary care physician should be very careful about differential diagnosis and should not make a diagnosis of somatoform disorder before ruling out any existing organic disorder. Even the slightest doubt that somatic complaints may have an organic cause must be taken into account to clarify the diagnosis and, if this is not possible, the existing somatic symptom should be considered as "not" somatoform.

CONCLUSION

The evaluation of 1387 patients who had presented to primary care services revealed that the Brief PHQ-r is a quite good instrument for diagnoses of depression, panic disorder and somatoform disorder, and to differentiate between subjects with and without a psychiatric disorder.

It is believed that this instrument may play an important role with regards to providing an appropriate pre-evaluation of psychiatric symptoms, particularly when the patient and the physician have difficulty differentiating organic complaints from psychiatric problems.

It is concluded that, especially for primary healthcare clinicians whose workload limits their time, and who may not have access to the appropriate questions and the accurate approach, even when she/he considers a psychiatric disorder, the use of a self-administered preliminary assessment would make the process of making a diagnosis, starting treatment and have the patient acknowledge her/his diagnosis much easier.

Table 5
The comparison of Prime-MD and Brief PHQ-r diagnoses with regards to concordance, sensitivity, specificity, positive and negative predictive values

	Depressive disorder		*Major depressive disorder*			*Panic disorder*			*Somatoform disorder*	
	Original PHQ	*Brief PHQ-r*	*Prime-MD*	*Original PHQ*	*Brief PHQ-r*	*Prime-MD*	*Original PHQ*	*Brief PHQ-r*	*Prime-MD*	*Brief PHQ-r*
Sensitivity (%)	61	76.0	52.2	73	71.4	57.2	81	74.4	20.6	61.9
Specificity (%)	94	85.3	89.7	98	91.9	69.5	99	98.4	94.0	92.5
Accuracy (%)	88	83.5	81.8	93	90.6	72.9	98	97.8	74.0	89.5
Positive predictive value (%)	–	55.2	57.1	–	38.2	66.7	–	58.0	56.5	46.9
Negative predictive value (%)	–	93.7	87.6	–	97.9	53.3	–	99.3	75.8	95.8

ACKNOWLEDGEMENTS

This study was carried out using a grant from Pfizer Turkey.

KEY POINTS

- The Brief PHQ-r has been found to be a successful instrument for diagnoses of major/minor depressive disorder and panic disorder
- In somatoform disorder, the Brief PHQ-r has been found to be useful for excluding diagnosis, but not helpful in making the diagnosis
- The Brief PHQ-r may play an important role in pre-evaluation of psychiatric symptoms

REFERENCES

1. Freedman D (1984) Psychiatric epidemiology counts. *Arch Gen Psychiatry* **41**: 931–3.
2. Schulberg HC, Burns BJ (1988) Mental disorders in primary care: epidemiologic, diagnostic, and treatment research directions. *Gen Hosp Psychiatry* **10**: 79–87.
3. Rezaki M (1995) Depression in a population applied to a primary healthcare organization (in Turkish). *Turk Psikiyatri Derg* **6**: 13–20.
4. Ormel J, VonKorff M, Üstün TB et al (1994) Common mental disorders and disability across cultures. *J Am Med Assoc* **272**: 1741–8.
5. Goldman LS, Wise TN, Brody DS (eds) (1998) *Handbook of psychiatry in primary care*. American Medical Association, Chicago, IL.
6. Mulrow CD, Williams JW, Gerety MB et al (1995) Case-finding instruments for depression in primary care settings. *Ann Intern Med* **122**: 913–21.
7. Whooley MA, Avins AL, Miranda J (1997) Case-finding instruments for depression. *J Gen Intern Med* **12**: 439–45.
8. Spitzer RL, Kroenke K, Williams JBW et al (1994) Utility of a new procedure for diagnosing mental disorders in primary care. *J Am Med Assoc* **272**: 1749–56.
9. Çorapçıoğlu A, Köroğlu E, Ceyhun B et al (1996) Turkish adaptation of a psychiatric diagnostic scale (Prime-MD) in primary healthcare settings (in Turkish). *Neuropsychiatry Agenda* **1**: 3–10.
10. Parker T, May PA, Maviglia MA et al (1997) PRIME-MD: it's utility in detecting mental disorders in American Indians. *Int J Psychiatry Med* **27**: 107–28.
11. Kroenke K, Jackson JL, Chamberlin J (1997) Depressive and anxiety disorders in patients presenting with physical complaints. *Am J Med* **103**: 339–47.
12. Çorapçıoğlu A (1999) Sociodemographic characteristics of students with general health problems, in a university healthcare office (in Turkish). *Turk Psikiyatri Derg* **10**: 115–22.
13. Ateşçi FÇ, Karadağ F, Oğuzhanoğlu NK (2000) Psychiatric disorders in hospitalized patients in a university hospital (in Turkish). *Anatolian J Psychiatry* **1**: 148–56.
14. Spitzer RL, Kroenke K, Williams JBW et al (1999) Validation and utility of a self-report version of PRIME-MD. *J Am Med Assoc* **282**: 1737–44.
15. American Psychiatric Association (1994) *Diagnostic and statistical manual of mental disorders*. 4th edition, American Psychiatric Association, Washington, DC.
16. Kaplan HI, Saddock BC (eds) (1995) *Comprehensive textbook of psychiatry.* 6th ed. Williams & Wilkins, Baltimore, MD.
17. Becker S, Al Zaid K, Al Faris E (2002) Screening for somatization and depression in Saudi Arabia: a validation study of the PHQ in primary care. *Int J Psychiatry Med* **32**: 271–83.
18. Diez-Quevedo C, Rangil T, Sanchez-Planell L, Kroenke K, Spitzer RL (2001) Validation and utility of the patient health questionnaire in diagnosing mental disorders in 1003 general hospital Spanish inpatients. *Psychosom Med* **63**: 679–86.
19. Rezaki GB, Rezaki M (1996) Psychiatric problems in a population applied to a primary healthcare organization: one-year follow-up study (in Turkish). *Turk Psikiyatri Derg* **7**: 83–91.
20. Özkürkçügil Çorapçıoğlu A, Geçer H, Asıliskender N (1997) Prevalence of psychiatric problems in students in a university healthcare office (in Turkish). *J Kocaeli Univ Med* **2**: 21–5.
21. Sağduyu A, Ögel K, Özmen E et al (2000) Depression in primary healthcare (in Turkish). *Turk Psikiyatri Derg* **11**: 3–16.

See appendix on following page.

APPENDIX

The items included in **Brief PHQ-r** questionaire

1. During the *last 4 weeks,* how much have you been bothered by any of the following problems? (*Response categories: "Not bothered", "Bothered a little"* and *"Bothered a lot"*)

a. Stomach pain
b. Back pain
c. Pain in your arms, legs, or joints (knees, hips, etc.)
d. Menstrual cramps or other problems with your periods
e. Pain or problems during sexual intercourse
f. Headaches
g. Chest pain
h. Dizziness
i. Fainting spells
j. Feeling your heart pound or race
k. Shortness of breath
l. Constipation, loose bowels, or diarrhea
m. Nausea, gas, or indigestion

Additional questions that are not present in original questionnaire:

- Do you think that the reason for these complaints is your mental/psychological problems?
- Have you ever applied to a doctor for these problems?
- If yes, did the doctor say that the reason for your complaints was your mental/psychological problems?
- Do you have any known, diagnosed disease? If yes, please write it down.

2. Over the last 2 weeks, how often have you been bothered by any of the following problems? (*Response categories: "Not at all", "Several days", "More than half the days"* and *"Nearly every day"*)

a. Little interest or pleasure in doing things
b. Feeling down, depressed, or hopeless
c. Trouble falling or staying asleep, or sleeping too much
d. Feeling tired or having little energy
e. Poor appetite or overeating
f. Feeling bad about yourself—or that you are a failure or have let yourself or your family down
g. Trouble concentrating on things, such as reading the newspaper or watching television
h. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual
i. Thoughts that you would be better of dead or of hurting yourself in some way

3. Questions about anxiety. (*Response categories: "No"* and *"Yes"*)

a. In the *last 4 weeks,* have you had an anxiety attack—suddenly feeling fear or panic?

If you checked 'NO', go to question #4.

b. Has this ever happened before?
c. Do some of these attacks come *suddenly out of the blue*—that is, in situations where you don't expect to be nervous or uncomfortable?
d. Do these attacks bother you a lot or are you worried about having another attack?
e. During your last bad anxiety attack, did you have symptoms like shortness of breath, sweating, your hearth racing or pounding, dizziness or faintness, tingling or numbness, or nausea or upset stomach?

4. If you checked off *any* problems on this questionnaire so far, how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people? (*Response categories: "Not difficult at all", "Somewhat difficult", "Very difficult" and "Extremely difficult"*).