Diagnosis of common mental disorders by using PRIME-MD Patient Health Questionnaire

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Background & objectives: Primary care physicians in their clinical settings usually fail to diagnose common mental disorders (CMDs). Primary Care Evaluation of Mental Disorders (PRIME-MD) Patient Health Questionnaire (PHQ) has been shown to facilitate diagnosis of most CMDs seen in primary health care. Its utility in Indian setting has not been evaluated. We carried out this study in Indian setting to evaluate the extent of psychiatric morbidity as measured by PRIME-MD PHQ.

Methods: A total of 500 consenting patients attending Medical outpatient department were recruited. All subjects were first assessed by the physician for presence of any physical illness and psychiatric disorder and their socio-demographic data were collected. Subjects were asked to fill the PRIME-MD PHQ. Illiterate subjects were assisted by the research worker in filling up the questionnaire.

Results: At initial evaluation physicians opined that 30.4% of the subjects had psychological disorder, the most common diagnostic category was of anxiety disorders (15.8%), followed by depression (6%) and somatoform disorders (5.6%). On PHQ 42% subjects had at least one psychiatric diagnosis. The most common psychiatric diagnosis was panic disorder (18.4%), followed by other anxiety disorders (16.6%). On comparing the diagnosis of physicians and PHQ, out of 152 cases (30.4%) suspected to have any psychological disorder by the physicians in the initial evaluation, 105 were found to have PHQ diagnosis. Of the 348 cases in which physicians did not suspect any psychiatric diagnosis, 243 were also negative in PHQ screening. There was a significant correlation between physicians and PHQ diagnosis.

Interpretation & conclusions: There is a high psychiatric morbidity in the general medical practice and in many cases psychiatric morbidity is either missed or is misdiagnosed and by the physicians. Our results showed that PHQ could be a valuable screening instrument for psychiatric morbidity in primary care and general medical practice.

Key words Common mental disorders - PRIME-MD
Common mental disorders (CMD) result in substantial patient suffering, disability and health care costs\(^1\)-\(^3\), and are present as a primary or associated condition in at least 20 per cent of primary care outpatients\(^4\)-\(^6\). In fact, more patients with mental disorders are cared for in the primary care sector than in the mental health sector\(^7\)-\(^9\). In India, many researchers have evaluated the prevalence of common mental disorders in primary care settings and have reported a prevalence of 21 to 42.3 per cent\(^10\). The factors which predispose to common mental disorders include female gender, poverty, unemployment and lower levels of literacy\(^10\),\(^11\). However, studies have consistently shown that primary care physicians in their clinical settings fail to diagnose and treat 50 to 75 per cent of patients suffering from common mental disorders\(^5\),\(^12\)-\(^15\). Major obstacles to the recognition of mental disorders by primary care physicians include inadequate knowledge of the diagnostic criteria for CMDs, lack of awareness about the appropriate questions to ask to evaluate whether those criteria are met, and time limitations inherent in a busy clinic setting. To address these problems, many screening instruments like General Health Questionnaire-12 (GHQ-12)\(^16\), Symptom Checklist -90 (SCL-90)\(^17\), etc., have been designed to assist the primary care physicians. But these instruments do not provide specific psychiatric diagnosis and only help in ascertaining the presence or absence of psychological symptoms or certain psychopathology. To establish a psychiatric diagnosis, the physicians have to apply diagnostic algorithms, which is time consuming and not pragmatic.

Primary Care Evaluation of Mental Disorders (PRIME-MD) was the first instrument designed for use in primary care to diagnose specific psychiatric disorders using diagnostic criteria of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)\(^18\). It has two components, the first is a patient self-administered questionnaire which has screening questions for CMD. In the second component, physician administers clinician evaluation guide to patients who score positive on patient administered questionnaire. In its initial use, it was noticed that clinicians required considerable amount of time (average 8.4 min) to administer clinician evaluation guide\(^19\).

Due to the above limitation, Spitzer et al\(^19\) designed a fully self-administered version of original PRIME-MD, called PRIME-MD Patient Health Questionnaire (PHQ). PRIME-MD PHQ has been found to facilitate rapid and accurate diagnosis of the most common mental disorders seen in primary care\(^19\). Its usefulness has been tested in USA and United Arab Emirates, and it has been shown to have a high level of agreement with diagnosis made by psychiatrists\(^19\),\(^20\). However, its usefulness in Indian setting has not been evaluated. If found useful, it can help busy physicians in reaching a psychiatric diagnosis comparable to the current diagnostic system. We therefore undertook this study to assess the utility of PRIME-MD PHQ in Indian setting, and to evaluate the extent of psychiatric morbidity as measured by PRIME-MD PHQ.

**Material & Methods**

*Setting:* The study was carried out at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, a multispecialty teaching tertiary care referral hospital providing services to a major area of north India. The study protocol was approved by the Institute’s ethics committee.

*Sample:* The subjects were recruited on the basis of a written informed consent and freedom of choice of participation. Adult patients (\(\geq 15\) yr of age) attending the general medical Outpatient Department (Medical OPD) of PGIMER, Chandigarh, were approached to participate in the study. A total of 500 consenting patients attending Medical OPD of Unit-I at PGIMER, Chandigarh, were included.

*Instruments:* The following instruments were used:

(i) *Socio-demographic profile sheet:* A proforma, especially designed for the study, was used to record the relevant sociodemographic data.

(ii) *Clinical profile sheet:* A proforma, specifically constructed for this study, was used to record the following clinical details: past psychiatric history, past psychiatric treatment, family history of psychiatric disorders, etc.

(iii) *PHQ:* It is a standardized, brief and easy diagnostic assessment procedure designed for the busy clinician. According to the length of the questionnaire, PHQ has three versions: 2-page version (Brief PHQ) that covers only mood and panic disorder; 3-page version which covers 8 diagnoses; and the 4-page version, which in addition to the above has questions about menstruation, pregnancy, child birth, and recent psychosocial stressors. For this study, the 3-page version was used as it covers the common mental disorders.

The 3-page questionnaire has questions about symptoms and signs divided into eight diagnostic
categories corresponding to specific DSM-IV diagnoses. These are threshold disorders corresponding to major depressive disorder, panic disorder, other anxiety disorder, bulimia nervosa and sub-threshold disorders (in which the criteria for disorders encompass fewer symptoms than are required for any specific DSM-IV diagnosis) such as other depressive disorders, probable alcohol abuse or dependence, somatoform and binge eating disorders. There is an additional item asking about the patient’s functional status in relation to the symptoms.

Patient’s responses to the PHQ indicate to the physician, which if any, of the diagnostic categories is applicable to the patient. The evaluation by the physician can be done at any time during the encounter with the patient, but after the reasons for the patient’s visit are addressed to. After evaluating each patient but before reviewing the PHQ, the physician notes whether the patient is new or established, types of current physical disorders (hypertension, heart disease, diabetes, liver disease, renal disease, arthritis, pulmonary disease or other) and the physician’s opinion about any current mental disorder in the patient. The clinician then scans the completed questionnaire, verifies positive responses and applies diagnostic algorithms that are abbreviated at the bottom of each page. Before making a final diagnosis, a physician rules out any physical cause for the psychiatric disorders. Further, before diagnosing a subject as suffering from depressive disorder, the physician should evaluate the patient for the history of mania and normal bereavement.

For the study, Hindi translation of 3-page questionnaire was done using standard procedures of translation and back translation. All items of the scale were translated into Hindi by experts consisting of psychiatrists and psychologists. The back translation was performed by an independent expert committee comprising of one psychiatrist and two psychologists. Further editing was done based on the discussions between the experts and authors. The prepared draft was then used for initial try out on 10 subjects. On the basis of responses by the patients, final format was prepared.

Procedure: Subjects attending the Medical Outpatient Department were approached, explained about the purpose of the study and 500 consecutive consenting subjects were enrolled between January and February, 2004. Subjects with history suggestive of mental retardation and psychosis were excluded. All subjects were first assessed by the physician for presence of any physical illness and psychiatric disorder. The physicians also opined about the type of treatment the subjects would require for the psychological problems. After initial evaluation, patients’ socio-demographic data were collected and subjects were asked to fill the PRIME-MD PHQ. Illiterate subjects were assisted by the research worker in filling up the questionnaire.

The completed questionnaires were scanned by the physician or research worker; all positive responses were verified and diagnostic algorithms as abbreviated in the questionnaire were applied. Those subjects who had threshold or subthreshold psychiatric diagnosis were either treated by the physicians themselves or were referred to the psychiatric services depending upon the severity of symptoms.

Data analysis: For comparison Pearson’s Chi-square test was used and Pearson’s correlation was used to see the relationship/agreement between the diagnosis made by physicians and PHQ. SPSS version-14 was used for data analysis.

Results

In the current study, only illiterate subjects required assistance from the research worker and others who were literate, did not report any difficulty in understanding the questions in the questionnaire.

Socio-demographic profile: The sample predominantly consisted of males (55.4%), the age range of the sample was 15-80 yr, with a mean of 38.7±14.5 yr. Most of the subjects were married (76.4%), Hindus (67.4%) or Sikhs (28.0%) from urban (55.4%), nuclear families (62.4). 14.2 per cent were illiterate and 35.6 per cent were educated less than matric. Nearly half of the sample was educated up to or beyond 10 yr of formal schooling (50.2%) and was earning (49%) at the time of assessment. Most of the subjects who were not earning, belonged to the category of housewives (34.4%). Rest of the sample was unemployed (14.8%) or retired (5.6%).

Clinical profile: Most common symptoms leading to consultation with the physician in the sample involved gastrointestinal system (15%), followed by cardiovascular (11%), generalized pains (10.8%), headache (10%), respiratory or otolaryngeal system (9.6%), endocrine system (9.0%), haematopoitic system (6.8%), neurological system (5%), bones and joints (4.8%) and complaints involving other systems (11.6%).
A minority of the sample (6.4%) was opined to have disorders of psychological nature only. Only a few subjects (2.4%) had past history of psychiatric disorders and received treatment for the same. Two thirds of them (1.6% of the total) had received treatment from a psychiatrist in the past for more than 6 months. Family history of psychiatric disorder was reported by only 1.4 per cent of subjects.

**Psychological diagnosis by physicians:** At the initial evaluation, the physicians opined that 30.4 per cent of the subjects had psychological disorder, the most common diagnostic category was of anxiety disorders (15.8%), followed by depression (6%), somatoform disorders (5.6%), alcohol/drug use disorders (1%) and other psychiatric disorders (2%). At the initial evaluation physicians opined that most of these subjects did not require any psychiatric treatment (80.6%) but needed to follow up for further evaluation and only a few (11%) required psychotropic medications or psychological treatment/counselling. Only 2 per cent of cases required referral to the specialist/psychiatrist according to the physicians.

**Psychiatric diagnosis by PHQ:** Of the 500 subjects, 210 (42%) subjects had atleast one psychiatric diagnosis. Nearly one fifth (19.8%) of the total sample had multiple psychiatric diagnoses (Table I).

The most common psychiatric diagnosis was panic disorder (18.4%), followed by other anxiety disorder (16.6%). On comparing those with and without a psychiatric diagnosis by PHQ, it was found that psychiatric diagnosis was significantly more common in those who were educated less than Matric (Pearson’s Chi square 5.91, $P<0.05$) and in those not earning or earning less than 2,500 rupees per month (Pearson’s Chi square 6.26, $P<0.05$).

**Comparison of diagnosis physicians & PHQ:** On comparing the diagnosis of physicians and PHQ, following picture emerged: of the 152 cases suspected to have any psychological disorder by the physicians in the initial evaluation, 105 were found to have PHQ diagnosis. Of the 348 cases in which physicians did not suspect any psychiatric diagnosis, 243 were also negative in PHQ screening. In total, there was an agreement between physician and PHQ on presence or absence of psychiatric diagnosis in 348 (69.6%) cases.

For further analysis the diagnostic groups were clubbed according to predominant diagnosis and the number of diagnoses. The major diagnostic groups included depressive disorders ($N = 17$, 3.4%), anxiety disorders ($N = 45$, 9%), somatoform disorder ($N = 44$, 8.8%) and subjects with more than one diagnosis, i.e., having combination disorder ($N = 99$, 19.8%). With these broad diagnostic groups we compared the psychiatric diagnosis made by the physicians and PHQ. There was an agreement on 260 (52%) cases: in 243 (48.6%) cases with regard to lack of diagnosis and only in 17 (3.4%) cases for presence of specific psychiatric diagnosis (Table II).

**Validity of PHQ:** We tried to establish the validity of PHQ by looking at the correlations between PHQ

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**Table I.** Psychiatric disorders detected by PRIME-MD PHQ (N=500)

<table>
<thead>
<tr>
<th>Variables</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atleast one psychiatric diagnosis</td>
<td>210 (42.0)</td>
</tr>
<tr>
<td>Any threshold diagnosis</td>
<td>200 (40.0)</td>
</tr>
<tr>
<td>Any subthreshold diagnosis</td>
<td>162 (32.4)</td>
</tr>
<tr>
<td>Any mood disorder</td>
<td>54 (10.8)</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>25 (05.0)</td>
</tr>
<tr>
<td>Other depressive disorder</td>
<td>29 (05.8)</td>
</tr>
<tr>
<td>Any anxiety disorder</td>
<td>175 (35.0)</td>
</tr>
<tr>
<td>Panic Disorder</td>
<td>92 (18.4)</td>
</tr>
<tr>
<td>Other anxiety disorder</td>
<td>83 (16.6)</td>
</tr>
<tr>
<td>Somatoform disorder</td>
<td>128 (25.6)</td>
</tr>
<tr>
<td>Probable alcohol abuse/dependence</td>
<td>5 (01.0)</td>
</tr>
<tr>
<td>Multiple diagnosis (threshold/subthreshold)</td>
<td>99 (19.8)</td>
</tr>
<tr>
<td>2 diagnosis</td>
<td>43 (08.6)</td>
</tr>
<tr>
<td>3 diagnosis</td>
<td>45 (09.0)</td>
</tr>
<tr>
<td>4 diagnosis</td>
<td>11 (02.2)</td>
</tr>
</tbody>
</table>

**Table II.** Diagnostic agreement between initial physician evaluation and PHQ

<table>
<thead>
<tr>
<th>Diagnosis by physician</th>
<th>No psychiatric diagnosis</th>
<th>Anxiety disorders</th>
<th>Depression</th>
<th>Somatoform</th>
<th>Alcohol</th>
<th>Combination of disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>No psychiatric diagnosis</td>
<td>243</td>
<td>25</td>
<td>10</td>
<td>30</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>28</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Depression</td>
<td>9</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Somatoform</td>
<td>9</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Alcohol</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
diagnosis and diagnosis made by physician. There was a significant positive correlation between the physician and PHQ diagnosis (Pearson’s correlation 0.363; \( P<0.001 \)).

**Discussion**

Undetected psychiatric morbidity in primary care commonly leads to unnecessary investigation, medication and continued suffering of the patient. This inevitably leads to impaired family, occupational and social functioning\(^2\) thus, making it crucial for primary care and general practice physicians to be equipped with the necessary skills and measures for detecting and managing these patients. In view of the patient load and busy clinics, identifying and managing those with psychiatric morbidity in primary care and general practice is challenging. Hence, there is a need to devise instruments and self-rated questionnaires which can be reviewed by the clinicians and can help them in reaching clinical diagnosis and deciding the treatment in time efficient way. PHQ is the first self-report instrument used in the primary care and general practice which yields categorical psychiatric diagnosis, rather than an index of presence or absence of psychopathology. Results of our study showed the utility of PRIME-MD PHQ instrument for both patients and the clinicians. The instrument helped the clinicians to pick up specific psychiatric diagnosis in the least possible time and then plan treatment for the same.

The psychiatric morbidity (42%) recognized by the Hindi version-PHQ in the present study was more than that reported with use of original PHQ\(^19\), but was similar to that reported from United Arab Emirates\(^20\). This was also in the range of psychiatric morbidity reported in various studies from India\(^16\). Our study showed that PHQ was an efficient, less time consuming and useful method in reaching to a psychiatric diagnosis by a physician. At the initial evaluation physicians missed half of the subjects with PHQ diagnosis which was similar to that reported from United Arab Emirates\(^20\).

Regarding psychiatric diagnosis, the questionnaire showed that a significant proportion of subjects suffered from anxiety disorders. Most of the studies in the past from various parts of the world have reported depression to be the commonest mental disorder in primary care facilities\(^23\), but in our sample anxiety was the most common diagnostic category. Probably, higher prevalence of anxiety disorders compared to depressive disorders in our sample could be due to higher stigma attached to expression of depressive symptoms compared to anxiety and somatoform symptoms. Another important diagnostic group was of somatoform disorders. The higher prevalence of somatoform disorders to that of depressive disorders could be due to cultural difference and acceptance of expression model of stress. Raguram et al\(^13\) reported that expression of somatoform symptoms was inversely related to stigma, whereas depressive symptoms were related directly to the stigma scores. This probably explains higher prevalence of somatoform disorders in our study. None of the subjects fulfilled the criteria for bulimia nervosa. This could be due to the very low prevalence of eating disorders in the Indian subcontinent.

High prevalence of PHQ psychiatric diagnosis in those who were less educated and not earning or earning less than 2500 INR was in line with the previous findings from India and other parts of the world where a correlation has been shown between poverty and poor education, and higher prevalence of common mental disorder\(^10,11\).

There is a high psychiatric morbidity in the general medical practice and in many cases psychiatric morbidity is either missed or is misdiagnosed. From our study PHQ appeared to be a valuable screening instrument for psychiatric morbidity. It not only helped in making appropriate psychiatric diagnosis, but also increased the identification of psychiatric morbidity. As there is a high prevalence of psychiatric disorders in primary care and general medical practice, the research and policy need to focus on common mental disorders. More studies are required to assess the pattern of psychiatric morbidity in Indian population, so that these can be managed appropriately. Spitzer et al\(^19\) compared the results of PHQ diagnosis with the diagnosis made by mental health professionals and found identical prevalence of psychiatric morbidity by both measures. Similar studies are required to study the concurrent validity, sensitivity and specificity of the Hindi version of PHQ. Further studies are also required to study the influence of the PHQ diagnosis on the management issues like treatment given, referral to mental health professionals, etc.

**References**


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