Recognition of major depressive disorder and its correlates among adult male patients in primary care

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Summary

Background and aims. Primary care is one of the first points of contact for patients with major depressive disorder (MDD). However, before primary care centers can become effective referral points, it is essential to know the prevalence and current rates of detection of MDD in those centers. We aimed to determine the prevalence of MDD and its sociodemographic correlates in a primary care center and to evaluate the accuracy of the primary care physicians' diagnosis.

Methodology. This is an observational cross-sectional study conducted in a rural primary health care center on adult male attendees. PHQ-9 was used to screen for depression, which was confirmed by a psychiatrist who interviewed and diagnosed patients using the DSM-5 criteria. A primary care physician separately examined each patient for depression.

Results. Out of 335 adult male patients, 22.1% screened positive with PHQ-9 and 42 patients (12.5 %) had MDD Primary care physicians diagnosed only 45% of cases correctly, missing 55%. The correlation between the two physicians' and the psychiatrist's diagnosis had a Kappa of 0.342 and 0.281, respectively. Significant sociodemographic correlates were self-reported financial stress and life stressors.

Discussion. MDD prevalence was consistent with studies in other countries. The physicians' diagnosis may have been an overestimation due to the Hawthorne effect.

Conclusion. Primary care physicians were unable to diagnose a significant fraction of the depression. This emphasizes the need for further training at this level, to improve early diagnosis and referral rates.

depression, men, family practice

INTRODUCTION

Major depressive disorder (MDD) is one of the foremost causes of disability, ranking ninth in terms of total disability-adjusted life years (DALYs) [1]. Depression presents with a range of somatic symptoms, but in a country such as

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India, health care resources, particularly those for mental health, are stretched thin. Thus, primary care centers are important nodal points of contact for such patients.

The current rates of depression at the primary care level worldwide are estimated to be between 7.8 and 14.1% [2–7]. In comparison, the rates in India are 1.9 to 28.2% [8–11]. Few studies have looked into detection rates at the primary health care level. In Europe, primary care physicians were able to accurately detect 42–51% of cases of depression [6,12,13]. The attend-

ing physician often failed to investigate physical symptoms in patients. In many cases, they were not trained to diagnose mental illness. These are some of the reasons hypothesized for low detection of mental illness in primary care.

The focus of mental health care delivery in high-income countries is gradually shifting to the community, where primary care centers serve as first points of contact. However, a similar scenario in low-income settings is far from reality. The prevalence of depression and its detection rate by primary care physicians must be determined before primary care centers can become significant points of delivery of mental health care. This is a unique feature of this study, as few studies have investigated these points in this population.

AIMS AND OBJECTIVES

1. To determine the prevalence of MDD and its sociodemographic correlates among adult male patients attending an outpatient clinic of a primary care center.
2. To evaluate the accuracy of primary care physicians' diagnosis by comparing it with a psychiatrist's diagnosis.

MATERIALS AND METHOD

Study design and setting

This is an observational cross-sectional study conducted between June and November 2015 on patients attending the outpatient clinic of a primary health center in Gujarat, India.

A primary health center is the first tier of the public health care system in India. A single physician, along with supporting staff, manages it. The physician possesses a basic degree in medicine and provides care to patients within a prescribed geographical area. The center in this study was situated 20km from a small city in the state of Gujarat, India. It is run by a medical officer (MBBS) and other staff and has around 18,000 patients attending the outpatient department yearly. During the course of the study, the center's medical officer resigned and was replaced by another doctor. While the former held the basic degree of MBBS and had been a practicing physician for only 3–4 years, the latter had

been practicing as a medical officer for several years and held the degrees of MBBS and DPH (Diploma in Public Health).

Participants

The study was conducted on adult male patients who gave written informed consent. Males aged between 18 and 65 years attending the center's outpatient department were included. Those who did not give consent, had dementia or hearing problems or were too unwell to be interviewed were excluded.

Study tools

The Patient Health Questionnaire 9 (PHQ-9) (Hindi and Gujarati versions) was used to screen for depression. A psychiatrist interviewed those patients who screened positive to determine whether they fulfilled the DSM-5 criteria for MDD.

A meta-analysis of the validity and reliability of the PHQ-9 as a screening tool at various cut-off points concluded that at a cut-off of 10, the PHQ-9 has a pooled sensitivity of 0.78 and specificity of 0.87, which is adequate [14]. In primary care, the best cut-off for detecting depression using the PHQ-9 was estimated at 11, with a sensitivity of 0.76 and specificity of 0.81 [15]. Taking these into consideration, along with the DSM-5 criteria for diagnosis of depression where 5 out of 9 symptoms are required, we considered a cut-off of 9 in this study (taking a positive score of ≥2 on all questions other than question 9, where a score ≥1 was considered positive, thus making a total score of 8+1 as the cut-off). To further increase sensitivity, the psychiatrist interviewed all those who scored positive on the first two questions.

The interviewer administered the PHQ-9 orally, to improve the reliability of the responses and to include patients who were illiterate.

Permission was received from the Institutional Review Board known as the Institutional Ethics Committee for Human Research (IECHR).

Methodology

Before starting the study, the primary care physician was briefed regarding the nature of the

study and her role in it. She was informed that after she assessed a patient independently, in a separate room, like she did in her normal practice, she had to comment on whether the patient had depression along with her medical diagnosis.

We selected every second adult male patient aged 18 to 65 and provided them with information about the study. We assured patients that their responses would be kept confidential and that their participation in the study and their responses would not affect the treatment that they would receive. Every patient was provided with an information sheet in Gujarati containing all the salient points about the study. After obtaining written informed consent, the physician assessed and treated the patient. Following that, a psychiatrist interviewed the patient using PHQ-9. Although PHQ-9 is a self-report questionnaire, it was administered by oral interview to increase the reliability of the responses, to resolve any ambiguity in the questions, and for the benefit of illiterate patients. The psychiatrist interviewed in detail all patients who screened positive in the PHQ-9 and those who answered in the affirmative the first two questions (sadness of mood, lack of interest in surroundings). The DSM-5 criteria were used to diagnose Major Depressive Disorder

ANALYSIS

The prevalence of major depression and inter-rater agreement (Kappa statistic) were calculated between the primary care physician's diagnosis and the psychiatrist's diagnosis. T-test and chi-square test were used to find associations between depression and sociodemographic factors. A multivariate analysis was used to further clarify associations with those factors that showed a significant correlation during initial tests.

RESULTS

The study was conducted over 6 months and included 335 adult male patients (Table 1).

Table 1. Sociodemographic distribution of the sample (N=335)

Variable	N (%)
Age, years:	
18–29	104 (31)
30–39	60 (17.9)
40–49	60 (17.9)
50–65	111 (33.1)
Religion:	
Hindu	324 (96.7)
Muslim	11 (3.3)
Marital status:	
Single	70 (20.9)
Married	231 (68.9)
Divorced/separated	14 (4.2)
Widowed	20 (6)
Education:	
Illiterate	35 (10.4)
Primary	202 (60.3)
Secondary or higher	98 (29.3)
Income, Indian rupees:	
<6000	141 (42.1)
6000–100,000	192 (57.3)
≥100,000	2 (0.6)
Median (Inter-quartile range)	6000 (7000)
Occupation:	
Un-skilled	170 (51)
Semi-skilled	73 (21.7)
Skilled	40 (11.9)
Retired	35 (10.4)
Unemployed	17 (5.1)
Family type:	
Joint	195 (58.2)
Nuclear	140 (41.8)

Prevalence

Table 2. Distribution and diagnoses of depression in the sample (N=335)

Diagnosis	N (%)
No depression	254 (84.6)
Depression present	81 (24.17)
Major depressive disorder	42 (12.53)
Substance induced depression	23 (6.86)
Others (adjustment disorder and others)	16 (4.77)

The prevalence of MDD was 12.5%. An additional 11.6% of the sample studied had depressive disorders that did not meet the full diagnostic criteria for major depression. This group was composed mainly of two subgroups – those with adjustment disorders and those with alcohol-related depressive illness. The latter comprised individuals who had significant depressive features but were either currently consuming alcohol in large quantities or were suffering from the effects of alcohol withdrawal.

Clinical features of depression in the sample

Out of the 335 patients interviewed, 74 (22.1%) screened positive for depression (PHQ-9 ≥ 9). Sadness of mood and fatigue were the most common symptoms (93%) among those with major depression, while fatigue was the most common symptom in the entire sample (33%). Ten patients (2.9%) had attempted suicide in the past, while 30 patients or about two-thirds of those diagnosed with Major Depression Disorder had thoughts of dying or hurting themselves at some point.

PRIMARY CARE PHYSICIANS' DIAGNOSIS

Physicians diagnosed 51 patients with depression, out of whom only 19 were correctly diagnosed. Both physicians rated poorly for detection of depression (Kappa 0.342 and 0.281 respectively, which is classified as fair agreement) (Table 3) [16].

Table 3. Kappa statistic for agreement between the diagnoses of the psychiatrist and the primary care physicians

Physician 1			Physician 2		
Depression			Depression		
Psychiatrist's diagnosis	Physician's diagnosis		Psychiatrist's diagnosis	Physician's diagnosis	
	Depression present	Depression absent		Depression present	Depression absent
MDD present	11	22	MDD present	8	1
MDD absent	10	215	MDD absent	22	46
Weighted Kappa = 0.342 Standard error = 0.0894 95% CI = 0.167 to 0.517			Weighted Kappa = 0.281 Standard error = 0.0930 95% CI = 0.0987 to 0.463		

MDD, major depressive disorder.

SOCIODEMOGRAPHIC ASSOCIATIONS WITH MAJOR DEPRESSIVE DISORDER

Significant associations were seen between Major Depressive Disorder and income (p=0.001), financial stress (p=0.0104), family environment (p=0.0206) and life stressors (p<0.0001). On multivariate analysis, two factors, namely financial stress and life stressors, were found to be significantly associated with major depression. Age, religion, marital status, education and occupation were some of the other variables studied but they showed no significant association with depression (Table 4).

Table 4. Multivariate analysis of association of sociodemographic variables with major depression

Independent variables	$r_{partial}$	t	p^a
Income	0.03	0.64	0.5200
Financial stress	0.10	1.97	0.0495
Family environment	0.090	1.65	0.0990
Life stressors	0.23	4.40	<0.0001

a. Significance level: p<0.001.

DISCUSSION

Prevalence

The prevalence of MDD determined in this study is 12.5% (42 patients); 22.1% of the sample (74 patients) screened positive for PHQ-9. This is at the upper end of the global MDD rates at the primary care level, which were 7.8–14.1% [2–7]; only one study, conducted in the USA, found considerably lower rates of 4% [17].

Indian studies at the primary care level observed MDD rates ranging from 11.9 to 28.2% [8,10,11,18]. Among males, the rates were 10% [18] and 15% [8]. These are similar to the results of the current study. A meta-analysis calculated a rate of 8.9% (range 7.9–9.9%), similar to our observations. Rates found in rural areas were lower than those in urban areas [19].

The rates estimated by epidemiological studies were found to be lower. The WHO Global Burden of Disease Study puts the prevalence of MDD in the general population at 3.2% for males and 4.4% in all [20]. One factor to be noted while interpreting the results of epidemiological studies, such as those by Weissman et al. [21] (1.5–5.8%); Andrade et al. [22] (3–16.9%); Deswal et al. [23] (3.14%); and Sethi et al. [24] (19.4 per 1000), is that their estimated rates are often on the lower side. Issues with case definitions, lay interviewers' lack of expertise, and lack of detection of milder cases of illness are some of the reasons. Rates of non-psychotic disorders such as anxiety, depression, substance use, phobias are more likely to be underestimated by these studies, too [25].

Our study found that 22.1% of the sample screened positive with PHQ-9. This is similar to the rates seen by Salve et al. [11], who found that 26% of their sample screened positive for depression with 15.7% definitively diagnosed by MINI, which is again similar to the current study. Poongothai showed that 15.1% screened positive, however, theirs was an epidemiological study, so rates are expected to be slightly lower than those seen in primary care [26].

Clinical features of depression in the sample

On examining the symptomatology of patients with major depression, we found that suicidal ideation occurs in around two-thirds of patients and 97% complain of fatigue. This is similar to the rates prescribed by standard literature. [27] Poongothai et al. [26] found that depressed mood and fatigue were the most common symptoms reported, while suicidal ideation was present in 12% of those studied. Jonas et al. [28] observed that 5.1% had suicidal ideation and 4.2% had attempted suicide, similar to the current results. Weissman et al. [21] reported that loss of energy was the commonest symptom. Finally, Inagaki et al. [4] detected the rate of suicidal ideation as 71% among those with Major Depressive Disorder, which is similar to that of the current study [4].

Yamamoto analyzed the correlation of physical symptoms with depression. They found that symptoms such as fatigue (96.2%), sleep disturbance (81.9%), loss of appetite (73.3%) and weight loss (40%) were more likely to be associated with patients with depression than with those without depression. Males tend to present more often with somatic symptoms. The diagnosis of depression was more likely in those with multiple symptoms [29]. Our study had similar findings, with the most common symptom being fatigue.

ACCURACY OF PRIMARY CARE PHYSICIANS' DIAGNOSIS

Even though basic medical training is supposed to provide some experience with diagnosing psychiatric disorders, detection by primary care physicians in this study was fairly low. Both medical officers were able to correctly diagnose only a fraction of those with major depression: 19 out of 42, i.e. 45%.

We find that these rates are comparable to those found by studies done in other parts of the world. Simon et al. [12] found that detection rate of depression by the primary care physician was 42%. In Europe, the general practitioner detected 51% of the depressive, anxiety and somatic disorders [6]. A study conducted in Japan assessed the primary care physicians' rates of diagnoses of both depression and alcohol use disorders. Kappa was calculated in entirety at 0.43. The general practitioner missed all the alcohol-related diseases and half the cases of major depression [13].

This finding is pleasantly surprising, as we would expect rates of detection in India to be lower than those in higher-income countries where the health care system is better organized. However, the Hawthorne effect may be responsible for this. It implies that individuals under observation tend to behave differently than when they are not. At the end of the study, when the physicians involved were interviewed regarding their experience of participating in the study, they both reported that they routinely do not screen for psychiatric illnesses during their daily practice. They had only asked the relevant questions to the study population because they were expected to comment on whether patients had depression or not. Further, both reported that over the course of the study they got better at detecting depression. One said that prior to participating in the study, she had never made a single referral for depression, even if she suspected it.

SOCIODEMOGRAPHIC CORRELATES OF MAJOR DEPRESSIVE DISORDER

Marital status (MDD is more common in single, divorced and widowed males), family structure and education were some of the common factors found to be associated with depression. Depression is also found to be more common in families [27]. The current study failed to find any significant correlation with the aforementioned factors. The smaller sample size may explain this difference.

It is worth noting that in higher-income countries poverty is significantly associated with depression, while this association was not found in lower-income countries, except in Pondi-cherry [30]. In our study, even though an initial association was seen with lower income during a univariate analysis, it was not found during a multivariate analysis. However, when we compared the income of those with depression against those without, we found that the former group had a significantly lower median income. There was, however, a definite correlation with financial stress (as perceived by the patient). Husain et al. reported similar findings in their study [31].

Another factor found to be significantly related to depression was life stressors and it has been confirmed by various researchers [32–34]. However, this should be interpreted with caution, keeping in mind the cognitive state of the depressed individual and their tendency to view present and past events in a negative light. Accordingly, depressed individuals are more likely to report adverse life events. Also, it is difficult to distinguish causation from effect, as mental illness results in disability, which in some cases leads to loss of livelihood and relationships [34].

CONCLUSIONS

A significant proportion (12.5%) of male patients attending a primary care center in Gujarat suffered from depression and a larger number (22.1%) screened positive with the PHQ-9. Self-reported financial stress and life stressors were significantly associated with depression.

Primary care physicians were able to correctly diagnose 45% of the cases of depression, with a Kappa of 0.342 and 0.281, which is fair. These rates are towards the optimistic range and the Hawthorne effect should be kept in mind while interpreting this result.

MERITS AND LIMITATIONS OF THE STUDY

The study was done exclusively on males. There is almost no data regarding prevalence and correlates of depression in males alone.

We assessed the rates of detection of depression by a primary care physician. There is practically no data in this area from low-income countries, where the primary care set-up is still rudimentary.

We suspected that the Hawthorne effect played a part in estimating the detection rate of depression by the primary care physician. Both physicians reported that they do not routinely check for depression in their daily practice. However, blinding is not possible in such a study as active participation of the physicians was required, so this bias was inevitable.

Finally, the study was conducted in a single center and hence the generalizability of the results regarding the primary care physicians' diagnoses is limited.

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