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# Depression and public health
# An overview

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**Abstract**

Depressive disorders are a significant public health issue. They are prevalent, disabling, often chronic illnesses, which cause a high economic burden for society, related to both direct and indirect costs. Depressive disorders also influence significantly the outcome of comorbid medical illnesses such as cardiac diseases, diabetes, and cancer. In primary care, underrecognition and undertreatment of depressive disorders are common, despite their relatively high prevalence, which accounts typically for more than 10% of patients. Primary care physicians should be aware of the common risk factors for depressive disorders such as gender, neuroticism, life events and adverse childhood experiences, and they should be familiar with associated features such as a positive psychiatric family history and prior depressive episodes. In primary care settings, depressive disorders should be considered with patients with multiple medical problems, unexplained physical symptoms, chronic pain or use of medical services that is more frequent than expected. Management of depressive disorders in primary care should include treatment with the newer antidepressant agents (given the fact they are typically well tolerated and safe) and focus on concomitant unhealthy behaviors as well as treatment adherence, which may both affect patient outcome. Programs aimed at improving patient follow-up and the coordination of the primary care intervention with that of specialists have been found to improve patient outcomes and to be cost effective. 

*Keywords:* Comorbidity; Depression; Management; Medical illnesses; Primary care; Public health

## Introduction

Depressive disorders and especially major depressive disorder (MDD) are fairly prevalent conditions in the general population. Significant suffering, high morbidity and mortality, and psychosocial functional impairment are typically associated with depressive disorders. Unfortunately, despite the availability of numerous effective treatments for depressive disorders, these latter are often underrecognized and undertreated in the community. Several factors contributing to the underrecognition of depression have been identified, ranging from the stigma of depression itself to the relative lack of systematic ascertainment of depressive symptoms by primary care physicians (PCPs). Recently, the public health significance of depression has been stressed, due to the significant impact that depression has on the course and mortality associated with other medical diseases. There is evidence that patients affected by chronic illnesses have a higher risk for depression compared to the general population. Similarly, depressed patients present substantial rates of comorbidity with chronic medical diseases.

In this review, we consider the issue of the public health relevance of depressive disorders and we focus on the recognition and management of depression, particularly in the primary care setting. Public health strategies adopted to address and prevent depressive disorders' burden to the community are also reviewed.

## Depression: clinical features and differential diagnosis

Patients who suffer from depressive disorders typically present with a constellation of psychological, behavioral, and physical symptoms. Tables 1–3 list some of the most common psychological (Table 1), behavioral (Table 2), and physical symptoms (Table 3) reported by patients with depressive disorders. However, the traditional diagnostic

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Table 1
Unipolar depression: common psychological symptoms

| |
|---|
| • Depressed mood |
| • Irritability |
| • Anxiety/nervousness |
| • Reduced concentration |
| • Lack of interest/motivation |
| • Inability to enjoy things |
| • Lack of pleasure/anhedonia |
| • Reduced libido |
| • Hypersensitivity to rejection/criticism |
| • Perfectionism/obsessiveness |
| • Indecisiveness |
| • Pessimism/hopelessness |
| • Feelings of helplessness |
| • Cognitive distortions [e.g., "I am unlovable"] |
| • Preoccupation with oneself |
| • Low self-esteem |
| • Feelings of worthlessness |
| • Thoughts of death or suicide |
| • Thoughts of hurting other people |

approach to depressive disorders has identified depressed mood and loss of interest/pleasure in most activities as key features of these conditions. Both can be present at the same time, but one of them is sufficient to define depressive disorders, if certain associated symptoms are present. The cluster of associated symptoms, the duration of the syndrome as well as the degree of functional impairment are essential to distinguish depressive disorders from physiological mood variability. The continuum of depression from mild, short-lasting syndromes towards severe, chronic/recurrent and disabling disorders has been repeatedly stressed [1,2]. The Diagnostic and Statistical Manual of Mental Disorders—4th Edition [3] defines MDD as depressive mood or reduced interest/pleasure, accompanied by at least four vegetative, cognitive and psychomotor symptoms, lasting for at least 2 weeks. The accompanying symptoms include insomnia or hypersomnia, loss of energy (fatigue), loss or increase of either appetite or weight, diminished ability to think or concentrate, psychomotor agitation or retardation, feelings of worthlessness or excessive guilt and recurrent thoughts of death or suicide. The persistence of this syndrome for at least 2 years is called chronic depression. On the other hand, when depressed mood or lack of interest/pleasure are associated with fewer of the previously mentioned symptoms (not exceeding three), that mild syndrome lasting for at least 2 weeks is called minor depression. The persistence of this syndrome for at least 2 years is called dysthymic disorder [3].

Table 2
Unipolar depression: common behavioral symptoms

| |
|---|
| • Crying spells |
| • Interpersonal friction/confrontation |
| • Anger attacks/outbursts |
| • Avoidance of anxiety-provoking situations |
| • Reduced productivity |
| • Social withdrawal |
| • Avoidance of emotional and sexual intimacy |
| • Reduced leisure-time activities |
| • Development of rituals or compulsions |
| • Workaholic behaviors |
| • Substance use/abuse |
| • Self-sacrifice/victimization |
| • Self-cutting/mutilation |
| • Suicide attempts/gestures |
| • Violent/assaultive behaviors |

Table 3
Unipolar depression: common physical symptoms

| |
|---|
| • Fatigue |
| • Leaden feelings in arms or legs |
| • Sleeping too little/insomnia |
| • Sleeping too much/hypersomnia |
| • Decreased appetite |
| • Weight loss |
| • Increased appetite |
| • Weight gain |
| • Sexual arousal difficulties |
| • Erectile dysfunction |
| • Delayed orgasm/inability to achieve orgasm |
| • Pains and aches |
| • Headaches |
| • Muscle tension |
| • Gastrointestinal upset |
| • Heart palpitations |
| • Burning or tingling sensations |

The diagnosis of depressive disorders in primary care may be complicated by the fact that patients with certain medical diseases such as diabetes may present with physical symptoms resembling those of depression (e.g., fatigue). Practitioners should be aware of the societal stigma of depression and of the reluctance of some patients in reporting their psychological distress, with consequent greater focus on physical symptoms than on sadness. This bias may vary in relation to the cultural and ethnical background of patients [4].

Two questions regarding whether patients suffer from depressed mood and/or diminished interest/pleasure have a high sensitivity (about 95%), but unfortunately a low specificity (57%) for diagnosing MDD. Consequently, posing these two questions can be useful as a first approach to the patient presenting with risk factors for depression, but further inquiry is required to establish the diagnosis [5]. Although depressive disorders are frequently associated with medical illnesses, the DSM-IV considers that potential medical illnesses underlying depressive symptoms should be excluded to make the diagnosis of an MDD. This hierarchical approach is typically ignored by clinicians, who tend to make the diagnosis of MDD even in the presence of comorbid medical conditions that may be etiologically related to the condition itself. Nevertheless, the issue of differential diagnosis with medical diseases still exists, since patients may present transient demoralization due to their physical illness or fatigue or other cognitive and neurovegetative symptoms, not fulfilling the criteria for major or even minor depression. For instance, weight loss and fatigue may also be associated

with disorders such as diabetes, cancer, and thyroid disease. The medical and psychiatric history together with the physical examination should guide any further diagnostic work-up. To assess the biochemical profile of the patient, routine laboratory tests (e.g., hemochromocytometric test, thyroid function test, folate and B12 levels) can be useful, but for diagnosis of depression they are of little help, although measurement of serum thyroid-stimulating hormone is indicated for women more than 65 years of age and for patients with additional signs or symptoms of hypothyroidism [6]. Some special consideration should be taken in evaluating concomitant treatments that could be responsible for depression, for instance glucocorticoids and reserpine [7]. Despite anecdotal reports, beta blockers do not appear to cause depression [7]. It has been suggested that depression in some cases may appear as a reaction to subclinical cardiovascular symptoms [8], thus the differential diagnosis should also take into account possible medical diseases.

## Depression and public health

Depressive disorders are quite important from a public health perspective, as they are common, they may significantly impair psychosocial functioning, and effective interventions are available [9].

### *Epidemiology of depression*

Both the Epidemiological Catchment Area Study and the National Comorbidity Survey Study have found that major depression is a prevalent disorder in the general population, with cross-sectional rates ranging from 2.3% to 4.9%, respectively [10,11]. Lifetime prevalence of MDD in both the United States and Western Europe was found to hover around 13.3–17.1% in the general population [12]. A more recent study found that the 6-month prevalence of major depression was 17% among Western European populations [13].

### *Morbidity, disability, and mortality in depression*

Major depressive episodes have also been characterized by a significant burden of subjective suffering, increased morbidity, and impaired social and work functioning [14]. Depression is estimated to rival virtually every other known medical illness in burden of disease morbidity early in this millennium [15]. With respect to physical functioning, depressed patients score in average 77.6% of normal function, with advanced coronary artery disease and angina being 65.8% and 71.6%, respectively, and back problems, arthritis, diabetes and hypertension ranging from 79% to 88.1% [16]. In acutely ill hospitalized older persons, the health status of patients with more symptoms of depression is more likely to deteriorate and less likely to improve during and after hospitalization [17]. Major depressive episodes have also been characterized by increased mortality [18–20]. While in the general population suicides account for about 0.9% of all deaths, depression is the most important risk factor for suicide, with about 21% and 18% of the patients with recurrent depressive disorders and dysthymia attempting suicide, respectively. These rates result in an even higher proportion of depressed patients among suicides. About two thirds of suicides occur in depressed patients [21]. Other complications of depressive disorders are commonly encountered in clinical practice, including homicidal/aggressive behavior and drug addiction [22,23]. Depressive conditions cause substantial disability and cost in the US alone $43.7 billion/year. Of this total, $12.4 billion (28%) is attributable to direct costs, $7.5 billion (17%) comprises mortality costs, and $23.8 billion (55%) is derived from the two morbidity cost categories [24]. A study of computerized record systems of a large staff-model health maintenance organization showed that patients diagnosed as depressed had significantly higher annual health care costs ($4246 *vs*. $2371, $P < .001$) and higher costs for every category of care (e.g., primary care, medical specialty, medical inpatient, pharmacy, laboratory) than patients who were not depressed [25]. Depressive disorders are likely to cause more disabilities than many other chronic diseases such as osteoarthritis and diabetes, with a possible exception being myocardial infarction [26]. It has been calculated, in fact, that almost 1.5 million years of life (number of disability-adjusted life years) are lost every year in established markets [27]. A recent WHO report ranked depression as the fourth medical condition with the greatest disease burden worldwide, measured in disability-adjusted life years, which express years of life lost to premature death and years lived with a disability of specified severity and duration. The same report predicted that depression would be the condition with the second greatest disease burden worldwide by 2020 [28]. In a large-scale study of the World Health Organization concerning patients attending a primary care facility, patients with depressive disorders reported in average 8 days of disability in the month preceding the referral. The latter was a significantly higher burden of disability compared with the 2 days lost in the nonpsychiatric patients [29]. These findings were confirmed among patients with major depression by a study conducted in Western Europe, where the degree of disability was found directly related to severity of depression. [13]. Appropriate antidepressant therapy improves the daily functioning and overall health of patients with depressive disorders [30,31]. Nevertheless, patients treated for depression still represent a population with significant disability, which precludes regular functioning in a work setting. The DEPRES-II study has found that patients treated for depression by a health care professional were expected to lose in average 30 days of normal activity and 20 days of paid employment during the following 6 months [32].

*Impact of depression on medical comorbidity*

Depressed patients often have comorbid medical illnesses as arthritis, hypertension, backache, diabetes, and heart problems. The prevalence of these chronic medical conditions in depressed patients was found to be high regardless of the medical context of recruitment, with an overall rate ranging from 64.9% to 71.0% of subjects [33]. Several studies indicate that depression significantly influences the course of concomitant medical diseases. Some degree of depression in patients hospitalized for coronary artery disease is associated with increased risks of mortality, and also with continuing depression over at least the first year following hospitalization [34]. The increased risk of cardiac mortality has been also confirmed in a large community-dwelling sample of subjects with cardiac diseases presenting with either major or minor comorbid depression. The same study found that, in the community, those subjects without cardiac disease but with depression had also an increase in their risk of cardiac mortality ranging from 1.5- to 3.9-fold [35]. In Type 1 or 2 diabetic patients, the occurrence of depression was associated with a significantly higher risk of diabetes-specific complications such as diabetic retinopathy, nephropathy, neuropathy, macrovascular complications, and sexual dysfunction [36]. Data from the Hispanic Established Population for the Epidemiologic Study of the Elderly indicated that death rates in this population were substantially higher when a high level of depressive symptoms was comorbid with diabetes (odds ratio = 3.84) [37].

Depression symptom severity is also associated with poor diet and medication regimen adherence, functional impairment and higher health care costs in primary care diabetic patients [38]. Underrecognition and undertreatment of depression in the elderly patients has been associated in primary care with an increased medical utilization [39]. Among elderly patients (aged 65 years or more), a significant correlation exists among depression and the risk of recurrent falls, with an odds ratio of 3.9 when four or more depressive symptoms coexist. These data are of particular importance since falls in the elderly are a relevant and well-recognized public health problem [40]. With respect to the overall mortality risk, the studies linking depression to early death are poorly controlled, but they suggest that depression substantially increases the risk of death, especially death by suicide and other violent causes and by cardiovascular disease [41]. In post myocardial infarction patients, there is a four- to sixfold increase in mortality rate among those suffering from depression [42]. Patients with cancer and comorbid depression are also at higher risk of mortality as well as longer hospital stay [43] Unfortunately, despite the impact of depression on overall morbidity, functional impairment and mortality, a significant proportion of sufferers (43%) fail to seek treatment for their depressive symptoms [13].

*Impact of medical illnesses on depression*

An important aspect of the relationship between depression and medical illnesses is represented by the potential impact that either the emergence of medical illnesses or changes in the severity of medical illnesses have on the course of depression itself. This area has been clearly understudied, as depression is not typically investigated as a secondary outcome domain in treatment studies of medical illnesses. For example, hormone replacement therapy may improve subsyndromal depressive symptoms in postmenopausal women and may enhance antidepressant response for older women with major depression [44]. In a study of diabetic patients, severity of depression over follow-up was related to the presence of neuropathy at entry, and to incomplete remission during the initial treatment trial [45]. By the 10th year of insulin-dependent diabetes mellitus, an estimated 47.6% of a sample of young diabetics developed at least one psychiatric disorder, with MDD being the most prevalent (27.5%) [46]. In addition to diabetes, other medical and neurological conditions have been associated with an increased risk for MDD. For example, Fava et al. [47], in their review of the literature have shown that MDDs are a major and life-threatening complication of Cushing's syndrome, Addison's disease, hyperthyroidism, hypothyroidism, and hyperprolactinemic amenorrhea, and that a treatment primarily addressing the physical condition may be more effective than antidepressant drugs in such organic affective syndromes.

## Depression and primary care

As mentioned previously, only 57% of depressed patients actively seek help for their depression; interestingly, most of them consult a PCP [13]. This finding is of particular importance because it stresses the crucial role of PCPs in the recognition and treatment of depression. Clinicians, and especially PCPs, should be aware that the prevalence of depressive disorders increases from 4.9% [11] to 10.4%, when we consider patients who have been referred for any reason to their general health care setting instead of the general population [48]. Depression is second only to hypertension as the most common chronic condition encountered in general medical practice [49]. Unfortunately, despite the high prevalence of depression among patients presenting for any reason in a health care setting, underrecognition of depression is common. [50]. It has been estimated through several studies that the rate of missed diagnoses of depression approaches 50% of cases [13,50]. It appears, therefore, crucial to provide clinicians and especially PCPs with information concerning risk factors for depression both in the general population and in a health care setting.

*Risk factors of depression in primary care*

Four risk factors have been consistently associated with MDD, and the level of evidence suggests that at least some of the association is indeed causal: gender, stressful life events, adverse childhood experiences, and certain personality traits. In the National Comorbidity Study, the lifetime prevalence of MDD in the US population was estimated to be 21.3% in women and 12.7% in men [11]. A wide range of environmental adversities such as job loss, marital difficulties, major health problems and loss of close personal relationships are associated with a substantial increase in risk for the onset of MDD [51]. A range of difficulties in childhood including physical and sexual abuse, poor parent–child relationships, and parental discord and divorce almost certainly increase the risk for development of MDD later in [52]. Certain kinds of personality traits appear to predispose to MDD, with the best evidence available for the trait termed "Neuroticism." Neuroticism is a stable personality trait that reflects the level of emotional stability versus the predisposition to develop emotional upset under stress [52]. A family history of depression is another risk factor, as depressive first-degree relatives increase by three- to fourfold the risk of being affected by MDDs [52].

*Associated features of depression in primary care*

PCPs should also consider some associated features of depression, as the presence of such features may increase the likelihood of a diagnosis of current MDD. For example, a prior history of depression may be significant, as a substantial proportion of patients have their first episode during childhood or adolescence [52], and the risk of recurrence is greater than 50% after a first episode of major depression [53]. Numerous previous depressive episodes are an even stronger predictor of recurrence of depression, with 70% and 90% of patients having recurrences of depression after having experienced two and three episodes, respectively [53]. The possibility of depression should certainly be considered in patients with multiple medical problems [54], unexplained physical symptoms [55], chronic pain [56], or use of medical services more frequent than expected [57]. Patients affected by chronic and disabling physical illnesses are at higher risk of depressive disorders, with rates being typically over 20%. Among patients hospitalized for coronary artery disease, 30% of subjects presented at least some degree of depression [34]. Diabetic patients present also a twofold increased prevalence of depression, with 19.6% and 32.4% rates in uncontrolled and controlled studies conducted with depression symptom scales, respectively [58,59]. Depression is also more common in obese persons than in the general population [60].

*Indication for referral to psychiatrists*

PCPs should always inquire about suicidal thoughts, since suicide is one of the most serious complications of depressive disorders. Typically, generic questions as "Have you been thinking lately that life is not worth living?" are appropriate to introduce the subject, and then "Have you also been thinking that you would be better off dead?" and, finally, "Have you considered suicide lately?" and "Have you tried?" [61]. Of course, in the event the patient reports suicidal thoughts/intent, referral to specialists or to local psychiatric emergency facilities (when appropriate) is strongly recommended. History of mania (elevated mood, increased energy, and impulsivity), suggested perhaps by a history of uncharacteristic behaviors, buying sprees, and excessive risk-taking behavior, often reported by family members, should induce referral of depressed patients to psychiatric specialists as well. Psychotic features (hallucinations and/or delusions), and substance abuse should also indicate the need of referral of a depressed patient to a psychiatrist [62]. Referral is also indicated in case of treatment-resistant depression, and whenever there is a danger that patient will harm someone else [62].

*Management of depression*

Several studies suggest that depression is undertreated in primary care. It appears that only 25% of depressed patients are prescribed antidepressant medications [13,63]. A recent study from our group [64] has shown that even when PCPs are informed that one of their patients suffers from MDD inadequate treatment or nontreatment are quite common occurrences. The applicability of guidelines for primary care patients has been questioned because most of them are based on clinical trials that have been conducted in other settings [65].

Depressed patients in primary care usually tend to have less psychiatric comorbidity (DSM-IV axis I disorders), but on the other hand more internal medicine comorbidity than patients seen by psychiatrists, and they are more likely to recover and have a lower risk of hospitalization [66]. Although some researchers have advocated that, for less severe depressive syndromes and especially recent-onset ones, 1 or 2 weeks of watchful waiting before initiating treatment can be reasonable in order to ensure the presence of the disorder and to differentiate it from paraphysiological reactions of demoralization [62], it is not clear at all whether such waiting offers any clinical advantage. In fact, in most instances, depression is detected in primary care patients only after depressive symptoms persist for longer periods. Mulrow et al. [67] reviewed the trials conducted in primary care on patients with major depression, "depression requiring treatment" according to the physician, dysthymia and mixed anxiety depression. Overall, 63% of the patients who received newer antidepressants had at least a 50% improvement in symptoms. The average response rate for patients

given placebo was 35%, whereas the average response rate for patients given tricyclic antidepressants (TCAs) was 60%. [67]. The authors concluded that newer agents (including selective serotonin reuptake inhibitors [SSRIs]) are significantly more effective than placebo but similar to TCAs in primary care. With respect to side effects, it has been shown that rates of specific adverse effects, such as headache, nausea, dry mouth, and constipation, vary significantly among the two classes of agents, confirming reports in patients treated in psychiatric settings [68,69]. Drop-out rates due to adverse events have been found significantly lower with newer antidepressants than with TCAs [67]. These results confirm data already available on the comparable efficacy and improved tolerability of newer agents compared to TCAs.

A recently published trial based in Norwegian general practices showed that the combination of sertraline and simple psychological treatment was more effective than psychological treatment alone, particularly for patients with recurrent depression [70]. However, the effect of psychotherapy alone in the treatment of depression in primary care has not been studied adequately yet.

A particular aspect of the management of depressed patients in primary care is related to the unhealthy lifestyles and behaviors associated with depression. For instance, depressed individuals are more likely than nondepressed subjects to engage in smoking, excessive alcohol intake, physical inactivity, and unhealthy eating habits [71,72]. It is therefore imperative that the physician informs the patients of the risks related to unhealthy habits/behaviors and of their relation with depression. The PCP should also discuss with the patients different approaches to these behavioral problems, such as nicotine replacement therapy [73], bupropion [74,75] as well as cognitive-behavioral therapy for smoking cessation [76]. As far as excessive alcohol intake is concerned, typical preventive and treatment strategies (e.g., chemical dependence counseling, disulfiram-based prevention and Alcoholics Anonymous), eventually coupled with new specific treatments [77,78], should be considered and proposed by the PCP. In some cases, depressed patients may present with other types of drug addictions, which should be addressed as well.

Adherence is another issue in primary care outpatients, since about 50% of those who receive an initial prescription for an antidepressant discontinue treatment within the first month. This is also likely to be a consequence of the lack of close follow-up [34,79,80]. Follow-up visits should be every 3–4 weeks during the first 3 months of treatment [81].

### *Management of comorbid depression with internal medicine diseases*

As previously mentioned, depressed patients often have concomitant physical illnesses as arthritis, hypertension, backache, diabetes, and heart problems. Their prevalence in depressed patients was found to be high regardless of the medical context where patients were recruited, with an overall rate ranging from 65% to 71% of subjects [82]. Several pathophysiological mechanisms have been suggested to explain the association of depression with high risk of comorbid internal medicine diseases, but these relationships remain poorly understood [83–85].

The issue of the safety of antidepressant treatment in medically ill populations is frequently counterbalanced by the risks of comorbid depression, as is the case of depression superimposed on cardiac diseases. Because cardiac patients already have a high risk of lethal cardiac events, and depression may further increase such risk, the treatment of concomitant depression in this population is recommended. [35]. Different authors recommend treatment of depression in diabetic patients because of the dramatic impact of depression on quality of life and its potential drawbacks on the management and outcome of diabetes [59]. Clinicians should consider the potential benefits of treating major depression aggressively in patients with physical illnesses due to the serious impact that depression may have on the course of such diseases as diabetes and myocardial infarction [86,87]. In patients with ischemic heart disease or known arrhythmias, TCAs due to their cardiovascular effects are not recommended [88]. Some concerns rise also when prescribing the newer antidepressants in patients receiving medical treatment for medical illnesses. In fact, selective serotonin reuptake inhibitors, as well as some of the new atypical antidepressants (e.g., nefazodone and bupropion), may cause significant drug–drug interactions because of their inhibition of the cytochrome P-450 system [89]. All medically ill patients are commonly told to increase the dose gradually, approaching the effective dose over a period of 7 to 14 days. Starting doses should be lower (about half the usual starting dose) for patients with hepatic or renal insufficiency and for elderly patients [62]. Blood level monitoring may be useful in case of poor efficacy or excessive side-effect burden. Since antidepressant medications are eliminated primarily through hepatic metabolism, it is important to consider the use of lower doses of antidepressants in patients with liver disease.

With respect to the efficacy of antidepressant treatment and behavioral/psychosocial interventions among primary care patients with medical illnesses and comorbid depression, very few trials have been conducted. In such trials, many patients with serious medical or physical illness have been excluded, limiting the generalizability of the findings [67]. Data are currently lacking, and future studies should compare the effectiveness of different therapies among primary care patients with less severe depression and greater medical and psychiatric comorbidity [67].

Some data on the treatment of depressive disorders comorbid with medical or neurological diseases are provided by studies conducted in specialized referral centers. As reviewed by Goodnick and Hernandez [42], in post-myocardial infarction (MI) patients, diabetic patients, post-

stroke patients, and cancer patients, SSRI administration has been generally found to be safe and relatively effective.

## Public health policy and depression

A redefinition of depression as a frequently chronic/recurrent and disabling disorder as well as the identification of adequate and cost-effective strategies for the prevention and treatment of depression, are essential to control this major public health problem [15]. The "National Depressive and Manic-Depressive Association consensus statement on the undertreatment of depression" emphasizes three levels where relative deficiencies occur with respect to the recognition and treatment of depressive disorders: the patient, the provider, and the health care system [63]. Educational programs and media initiatives such as the National Screening Day for Depression, as well as several Internet resources, are typically considered to be quite useful in promoting patient and family recognition of depressive disorders and improving attitudes regarding its treatment. Evidence-based data, however, are lacking to support such views [62]. Consumer advocacy associations may also play an important role by more closely attempting to reflect the needs of both patients and families. With respect to recognition and treatment of depressive disorders by PCPs, it is unclear whether screenings in the primary care setting should be adopted routinely for depression. Screening alone does not improve outcomes for patients with unrecognized depression [64,90,91]. On the other hand, screening may be useful when it is combined with additional programs aimed at providing support, such as those involving case management and collaborative care models [92,93]. Moreover, organized follow-up programs appear to be cost effective in primary care [94,95]. Training for the use of newer effective antidepressant treatments is also a priority in public health, since their wide use in primary care settings is expected to be highly beneficial from the patient, family and community standpoint [21].

Mental health care systems sometimes create barriers to the delivery of optimal treatment [63]. In fact, health maintenance organizations may limit the access to appropriate specialty care specialists and to better-tolerated treatments. Policy makers have been struggling for years with issues of cost containment in health care and the need to provide adequate, effective, and well-tolerated treatment for depression. Further work is certainly needed at a health care system level to improve the delivery of care for this important and highly disabling condition.

In the near future, health care providers will more likely face the challenge of treating depression in different cultural and social contexts. For this reason, it is a public health priority to train physicians in recognizing depression and its various possible clinical presentations in patients of differing ethnic and cultural backgrounds [4,96]

## Conclusions

The diagnosis and treatment of depressive disorders, including major and minor depression have tremendous public health significance. Due to the relatively high prevalence [48], their management should largely take place in primary care settings, as is the case of other common chronic diseases such as diabetes and hypertension. The availability of safe, well-tolerated, and effective antidepressant treatments facilitates management of depression in primary care settings. Programs aimed at improving patient follow-up, and the coordination of the primary care intervention with that of specialists have been found to improve patient outcomes and to be cost effective.

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