Psychiatry Research 220 S1 (2014) S3–S14

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Review article

Food for thought: understanding the value, variety and usage of management algorithms for major depressive disorder

Martin A. Katzman[a,b,c,d,e,*], Leena Anand[a], Melissa Furtado[a], Pratap Chokka[f,g]

[a] START Clinic for Mood and Anxiety Disorders, Toronto, ON, Canada
[b] Northern Ontario School of Medicine, Thunder Bay, ON, Canada
[c] Department of Psychology, Lakehead University, Thunder Bay, ON, Canada
[d] Department of Psychiatry, Faculty of Medicine, University of Toronto, Toronto, ON, Canada
[e] Adler Graduate Professional School, Toronto, ON, Canada
[f] University of Alberta, Edmonton, AB, Canada
[g] Chokka Center for Integrative Health, Edmonton, AB, Canada

ARTICLE INFO

Article history:
Submitted 9 October 2013
Accepted 11 October 2014

Keywords:
Algorithms
Depression
Guidelines
Management

ABSTRACT

By 2020, depression is projected to be among the most important contributors to the global burden of disease. A plethora of data confirms that despite the availability of effective therapies, major depressive disorder continues to exact an enormous toll; this, in part, is due to difficulties reaching complete remission, as well as the specific associated costs of both the disorder's morbidity and mortality. The negative effects of depression include those on patients' occupational functioning, including absenteeism, presenteeism, and reduced opportunities for educational and work success. The use of management algorithms has been shown to improve treatment outcomes in major depressive disorder and may be less costly than "usual care" practices. Nevertheless, many patients with depression remain untreated. As well, even those who are treated often continue to experience suboptimal quality of life. As such, the treatment algorithms in this article may improve outcomes for patients suffering with depression. This paper introduces some of the principal reasons underlying these treatment gaps and examines measures or recommendations that might be changed or strengthened in future practice guidelines to bridge them.

Contents

* Corresponding author at: START Clinic, 32 Park Road, Toronto, ON, Canada M4W 2N4. Tel.: +1 416 598 9344; fax: +1 416 598 8198.
E-mail address: mkatzman@startclinic.ca (M. Katzman).

0165-1781/

1. Background and epidemiology

The capacity to experience a range of emotions, feelings, and moods – joy, pleasure, sadness, anger, and so on – is part of the normal human experience. Such sensations become abnormal when they are out of proportion with or far outlast the cause (or have no specific or identifiable cause), and interfere with physical health and normal functioning. Depression is a common mood disorder, marked by often enduring and life-disrupting sadness or irritability and psychophysiological changes. The *DSM-5* will retain the current *DSM-IV* criteria for MDD (Table 1) (American Psychiatric Association, 2000), with the notable addition of complicated grief as a treatable cause.

1.1. Historical perspective

Although it has received a great deal of attention in 21st century media and medical literature, due in part to ongoing discussion about its true source and management, depression is hardly an entity unique to modern times. There is evidence that at least one eminent citizen of Rome in the first century BC experienced what today we call major depressive disorder (MDD), complete with suicidal ideation (Evans, 2007), as did the biblical King David (Ben-Noun, 2004). Writers from several ancient cultures including Greece, Persia, the Arab world, Peru, and Precolumbian America described features that we would now label as symptoms of depression (Elferink, 1999; Contreras Mas, 2003a, Radden, 2003; Rodriguez-Landa et al., 2007). As well, among the wide range of symptoms of "melancholia," (believed to be an organic disease related to a humoral imbalance), were pervasive mood disruption (sadness and anxiety) and features we now associate with bipolar disorder (grandiosity and excess energy) (Radden, 2003). The chronicity of the disorder was also recognized by a variety of Renaissance writers (Rousseau, 2000). In fact, one of the first books devoted to melancholia was published in 1585 (Contreras Mas, 2003b).

A casual review of quotations from creative writers in past centuries allows one to imagine that such phrases as "grim-visag'd comfortless Despair" (Thomas Gray, "On a Distant Prospect of Eton College," 1742) and "dull ey'd melancholy" (William Shakespeare, *Pericles*, 1609) referred to experiences not unlike those of modern sufferers of depression.

1.2. Epidemiology

Some 120 million people worldwide have some degree of depression (Lépine and Briley, 2011). According to the Canadian Community Health Survey 1.2 (Gravel and Beland, 2005), this number includes about 11.3% of Canadian adults over the course of their lifetime (Pearson et al., 2013). Lifetime prevalence data from other developed countries are generally similar (e.g., 12.8% in Europe, [Alonso et al., 2004]), although the US National Comorbidity Survey Replication found a lifetime prevalence of depression in the US of 16.2% (Kessler et al., 2005). One-year prevalence rates were 3.9%, 4.0% and 6.6% in European, Canadian and US studies, respectively (Alonso et al., 2004; Patten, 2005; Kessler et al., 2005). The incidence of depression in Canada increased over the years of the National Population Health Survey, from 2.9% in 2002–2003 to 7.2% in 2006–2007 (Wang et al., 2010). Prevalence and incidence are higher in women than in men, especially in younger age groups. Younger versus older individuals, patients with a family history of depression, and those with concurrent illnesses are also more likely to be affected (Patten et al., 2005, Wang et al., 2010). In the National Population Health Survey, family history was the strongest risk factor with a hazard ratio of 2.01 (Wang et al., 2010).

According to World Health Organization predictions, depression will be the second most important contributor to the global burden of disease by 2020, and the principal cause in developed countries by 2030 (WHO, 2004, Lépine and Briley, 2011). In the US, costs for depression treatment amount to more than $80 billion annually (Greenberg et al., 2003). Total costs for 28 European countries were estimated as €118 billion (or about 1% of the total European economy) in 2004 (Sobocki et al., 2006). In both cases, direct costs only accounted for about one-third of the total.

1.3. Importance

Of key importance is, of course, the relationship between MDD and morbidity, disability, and lowered quality of life. Whether temporary or sustained, loss of physical and cognitive function due to depression can be devastating to the health, daily lives, and occupational and social functioning of the individual afflicted. Moreover, MDD often negatively affects the people around the patient, extending the burden to family, coworkers, employers, and others (Lépine and Briley, 2011; Birnbaum et al., 2010). According to the National Comorbidity Survey Replication, the likelihood of functional impairment associated with mental disorders is nearly twice that of chronic medical disorders (Corbiere et al., 2013; Druss et al., 2009). The degree of disability correlates with the severity of depression (Lépine et al., 1997).

Although it has been widely accepted that depression is most likely to impair social interactions and relationships (Lépine and Briley, 2011), the condition also has a noteworthy impact on and implications for occupational functioning (Lerner and Henke, 2008; Adler et al., 2006). Many patients with MDD are of an age at which their employment productivity would normally be relatively high (Patten et al., 2005; Wang et al., 2010). Depression substantially interferes with the individual's ability to complete learning or occupational tasks and maintain employment (Adler et al., 2006; Lerner and Henke, 2008; McIntyre et al., 2008; Salis and Burkin, 2013), and therefore may limit educational and career successes. In the 2002 Canadian Community Health Survey (CCHS), for example, annual income among people with depression was a significant 9% lower than the mean (McIntyre et al., 2008). Also in the CCHS, depressed workers were more than five times more likely than those without a mood disorder to report having taken mental health disability days in the prior two weeks (McIntyre et al., 2008); in fact, they reported an average of 32 days in the past year during which the symptoms had resulted in their being totally unable to work or carry out normal activities (Gilmour and Patten, 2007). Patients with depression also acknowledge presenteeism challenges, completing less work and carrying out their employment tasks more poorly as compared with their performance in the absence of depression (Corbiere et al., 2013; Salis and Burkin, 2013). Absenteeism and presenteeism together account for 27.2 days lost per year per worker, totaling 225 million workdays and $36.6 billion annually in the US (Kessler et al., 2008; Corbiere et al., 2013). Workplace injuries are also more common among patients with depression (Patten et al., 2010). According to a study of more than 80,000 adults in Thailand, injuries were 1.6 times more likely among depressed or anxious individuals than those without a mood disorder (Yiengprugsawan et al., 2012). In addition, depression may occur in workers who have sustained an injury, delaying their return to employment (Franche et al., 2009; Corbiere et al., 2013).

The elevated risk of suicide in patients with MDD, some 20-fold higher than in the general population (Lépine and Briley, 2011), increases the personal and societal costs. In addition, there are links between depression and smoking (Lasser et al., 2000; Murphy et al., 2003), alcohol and substance abuse (Conway et al.,