

# Mood disorders and Gilles de la Tourette's syndrome: an update on prevalence, etiology, comorbidity, clinical associations, and implications

Mary May Robertson\*

*Department of Mental Health Sciences, University College London, W1W 7EY London, UK  
Department of Neurology, St George's Medical School and Hospital, Atkinson Morley Wing, SW17 London, UK*

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## Abstract

Gilles de la Tourette's syndrome (GTS) consists of multiple motor tics and one or more phonic tics. Psychopathology occurs in approximately 90% of GTS patients, with attention-deficit/hyperactivity disorder (ADHD) and obsessive-compulsive disorder (OCD) being common. Depression is common, with a lifetime risk of 10% and a prevalence of between 1.8% and 8.9%. Depression and depressive symptoms are found to occur in 13% and 76% of GTS patients attending specialist clinics, respectively. In controlled studies embracing over 700 GTS patients, the patients were significantly more depressed than controls in all but one instance. In community and epidemiological studies, depression in GTS individuals was evident in two of five investigations. Clinical correlates of depression in people

with GTS appear to be: tic severity and duration, the presence of echophenomena and coprophenomena, premonitory sensations, sleep disturbances, obsessive-compulsive behaviors/OCD, self-injurious behaviors, aggression, conduct disorder (CD) in childhood, and, possibly, ADHD. Depression in people with GTS has been shown to result in a lower quality of life, potentially leading to hospitalization and suicide. The etiology of depression appears to be multifactorial. Bipolar affective disorder (BAD) and GTS may be related in some individuals. However, it is noted that sample sizes in most of these studies were small, and it is unclear at the present time as to why BAD may be overrepresented among GTS patients.

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## Introduction

Depression is common, with a lifetime risk of about 10% and with rates almost double among women. It is also common in young people, particularly in adolescent girls, occurring in about 8%. It may be a mild or a severe disorder when the lifetime suicide risk is about 15%. Depression is sometimes referred to as a spectrum disorder with a variety of types, including "endogenous" major depressive disorder (MDD), dysthymia, unipolar/bipolar depression, and neurotic/psychotic depression. The etiology of depression is often multifactorial, with a wide variety of contributory factors, including genetic predisposition and psychosocial

variables, such as negative life events, adverse childhood circumstances, and adverse current social circumstances [1]. The current *International Classification of Diseases, Tenth Revision (ICD-10)* [2] and *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* [3] classifications favor unipolar/bipolar and severe/mild distinctions.

Depression is well known to complicate physical illness [4], particularly neurological disorders [5], and there are several ways by which depression and physical illness may be associated [6]. The assessment and appropriate treatment of depression in this context are crucial.

The assessment of depression may be complex. There are numerous diagnostic interviews, as well as physician-rated scales, that can be used to evaluate and diagnose depression, either specifically or as part of a larger psychopathological

\* Fax: +44 207 226 9979.

E-mail addresses: rejuuts@ucl.ac.uk, profimr@aol.com.

assessment. These include the Schedule for Affective Disorders and Schizophrenia, the Present State Examination, the Hamilton Depression Rating Scale, the Structured Clinical Interview for *DSM-IV-TR* [7,8], the Composite International Diagnostic Interview, the Clinical Interview Schedule—Revised, and the Schedules for Clinical Assessment in Neuropsychiatry, which are used primarily in research settings [9]. There are also many self-rating scales used to measure depressive symptomatology, including the Beck Depression Inventory (BDI), the Mood Adjective Checklist (MACL), the Crown Crisp Experiential Index (CCEI), the Hospital Anxiety Depression scale, and, in young people, the Kovacs Child Depression Inventory (CDI) and the Birlson Depression Self-Rating Scale (DSRS) [8]. In clinical practice, a full Mental State Examination (MSE) is important as many of the research interviews take time. The MSE may be supplemented by the use of self-report scales.

Bipolar affective disorder (BAD) is characterized by recurrent episodes of altered mood and activity, involving upswings as well as downswings. Individual episodes include MDD, manic episode, hypomanic (less severe) episode, and mixed episode [1]. There are two types of bipolar disorders included in *DSM-IV-TR* [3]: bipolar I and bipolar II. Bipolar I disorder is characterized by a single manic episode and no past MDD episodes. Bipolar II disorder is diagnosed if there are recurrent MDD episodes with hypomanic episodes. A manic episode is a distinct period of abnormally and persistently elevated, expansive, or irritable mood lasting for 1 week. The lifetime prevalence of BAD is about 1%, with females being more commonly affected. There is clear evidence of a strong familial component. Some studies suggest that manic illness may be precipitated by severe stress, and there may be a puerperal trigger factor [1].

The diagnostic criteria for Gilles de la Tourette's syndrome (GTS) include multiple motor tics and one or more vocal (phonic) tics lasting longer than a year [2,3]. The age at onset of GTS ranges from 2 to 21 years, with a commonly reported mean of 7 years. The onset of phonic tics is usually later, at around 11 years. Tics can be simple or complex, and premonitory sensations are common. Other characteristic features include echolalia, echopraxia, palilalia, and coprolalia (in 10–15%) starting at around 15 years [10–14]. It may well be that a younger age at onset is associated with a more severe GTS [15]. The most commonly used measure for tic severity is the Yale Global Tic Severity Scale (YGTSS) [16]. It was initially thought that GTS was lifelong, but Leckman et al. [17] suggested that the prognosis was better with an age at onset of 5.6 years; the worst severity was at 10 years; and the majority of symptoms disappeared in half of the patients by the age of 18 years. Coffey et al. [18] assessed youngsters with GTS and found that ages at onset were similar; at baseline, 88% of subjects met threshold criteria for at least mild symptoms, but only 30% met criteria for impairment. At 2-year follow-up, 82% of the subjects met criteria for tic persistence (no

significant difference from baseline), but only 14% met criteria for GTS-associated impairment that was significant. Bloch et al. [19] more recently studied 46 GTS children on follow-up after 7.6 years and reported that 85% had a reduction in tics during adolescence. Only increased tic severity in childhood was associated with increased tic severity on follow-up. The worst tic severity was observed at 10.6 years, on average. However, the worst ever obsessive-compulsive disorder (OCD) symptoms occurred approximately 2 years later than the worst tic severity. Increased childhood intelligence quotient was associated with increased OCD severity on follow-up. Although the prognosis of GTS is better than originally thought with regards to tic symptomatology, psychopathology, such as OCD, may persist severely until later. These studies are important as it appears that, although tics decrease, psychopathology may not decrease necessarily; the OCD increases. There have been suggestions that OCD and depression in the setting of GTS are related (see later); thus, a GTS patient may be prone to depressive symptoms or depression later on in life, despite the fact that tics may have lessened (i.e., as OCD symptoms increase). No studies have explored this to date.

GTS was once considered to be uncommon, but, since 2000, seven recent studies have suggested a prevalence of between 0.46% and 1.76% for youngsters between the ages of 5 and 18 years [13,14]. The prevalence of GTS in special educational populations is higher [20–22]. With GTS being considered rare initially, there were only a few case reports in the early literature, in contrast to the enormous number of as many as 568 papers on “Tourette” in the year 2005, as shown in a PubMed search undertaken in January 2006.

### Comorbidity and psychopathology

Few individuals with GTS in clinics have no other problems. An investigation embracing 3500 patients with GTS worldwide demonstrated that 88% had comorbidity. The most common was attention-deficit/hyperactivity disorder (ADHD), followed by obsessive-compulsive behavior (OCB) and OCD. Anger control problems, sleep difficulties, coprolalia, and self-injurious behavior (SIB) only reached high levels in individuals with comorbidity [23]. Studies have indicated that individuals with GTS have increased anxiety, hostility, and personality disorders [24–26]. Several have documented that, although the OCBs encountered in GTS are integral to GTS [27], they are significantly different from those encountered in “pure” or “primary” OCD [28,29].

### Prevalence of depression and depressive symptomatology in specialized GTS clinic populations

Following several early descriptions of depression in GTS patients, including that by one of the pioneers of GTS

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