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Original article

The incidence, psychiatric co-morbidity and pharmacological treatment of severe mental disorders in children and adolescents

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ABSTRACT

Background: Antipsychotic drug use among children and adolescents is increasing, and there is growing concern about off-label use and adverse effects. The present study aims to investigate the incidence, psychiatric co-morbidity and pharmacological treatment of severe mental disorder in Norwegian children and adolescents.
Methods: We obtained data on mental disorders from the Norwegian Patient Registry on 0–18 year olds who during 2009–2011 were diagnosed for the first time with schizophrenia-like disorder (International Classification of Diseases, 10th revision codes F20-F29), bipolar disorder (F30-F31), or severe depressive episode with psychotic symptoms (F32.3 or F33.3). Data on filled prescriptions for psychotropic drugs were obtained from the Norwegian Prescription Database.
Results: A total of 884 children and adolescents (25.1 per 100 000 person years) were first time diagnosed with schizophrenia-like disorder (12.6 per 100 000 person years), bipolar disorder (9.2 per 100 000 person years), or severe depressive episode with psychotic symptoms (3.3 per 100 000 person years) during 2009–2011. The most common co-morbid mental disorders were depressive (38.1%) and anxiety disorders (31.2%). Antipsychotic drugs were prescribed to 62.4% of the patients, 72.0% of the schizophrenia-like disorder patients, 51.7% of the bipolar disorder patients, and 55.4% of the patients with psychotic depression. The most commonly prescribed drugs were quetiapine (29.5%), aripiprazole (19.6%), olanzapine (17.3%), and risperidone (16.6%).
Conclusions: When a severe mental disorder was diagnosed in children and adolescents, the patient was usually also prescribed antipsychotic medication. Clinicians must be aware of the high prevalence of depressive and anxiety disorders among early psychosis patients.

1. Introduction

The onset of schizophrenia or bipolar disorder usually occurs in early adult life, but a number of patients have their first episode of psychosis, mania or depression in adolescence or even in childhood [1,2]. Among all adults with schizophrenia, about 1% experienced onset of disease prior to 13 years of age and 12–33% had an onset prior to 18 years [3]. A registry-based nationwide study from specialist health care in Denmark demonstrated that 0.3% of the population were diagnosed with a schizophrenia-like disorder by 20 years of age [4]. Schizophrenia with onset prior to 18 years of age has a poorer psychosocial outcome than adult-onset schizophrenia [5], with a particularly poor outcome for onset before 13 years of age [6].

Bipolar disorder has traditionally been regarded as an adult-onset disorder, but recent nationwide studies from UK and US have demonstrated that bipolar disorder is often diagnosed in paediatric populations as well [7,8]. In a multi-center study from US, Germany and the Netherlands, the proportion of adult bipolar disorder patients with onset prior to age 19 was 61% in the US and 30% in Europe, indicating substantial geographical difference in prevalence of paediatric bipolar disorder [9]. In the US National

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Comorbidity Survey of nationally representative adolescents, 2.9% of the 13–18 year olds met diagnostic criteria for bipolar disorder type I or II [8]. This is higher than European figures, but a recent study from Germany demonstrated an 18% increase in the rate of discharge diagnosis for bipolar disorder among 0–19 year olds between 2000 and 2013 [10]. In the above mentioned registry-based study from specialist health care in Denmark, 0.1% of the population were diagnosed with bipolar disorder by the age of 20 years [4].

The range of prevalence estimates for paediatric psychosis illustrates the need for investigations of diagnostic practice in a variety of settings. The incidence rates for diagnosed schizophrenia, bipolar or depressive disorder with psychotic features among children and adolescents in Norway are presently unknown.

If depressive or anxiety disorders are diagnosed prior to the first-episode of psychosis, they may serve as early signs and prognostic markers of the emerging severe mental disorder [11]. For about 20% of patients with adult-onset psychosis clinical depressive symptoms are present even 10 years after onset of psychosis [12]. Depressive or anxiety disorders may also be co-morbid disorders, present in about half of adult first-episode psychosis patients [13,14]. Good prevalence data on co-morbid mental disorders in adolescent-onset psychosis are, however, lacking.

Early adequate treatment of first-episode psychosis in young adults may improve long-term outcome and most often involves the use of antipsychotic drugs [15]. The use of antipsychotic drugs in children and adolescents is, however, controversial due to a scarcity of clinical evidence from randomized controlled studies [16]. Also, a recent meta-analysis has demonstrated that antipsychotics had only modest symptomatic effect in younger patients [17]. A Danish randomized controlled trial of quetiapine vs aripiprazole among 12–17 year old first-episode psychosis patients demonstrated that both drugs had moderate effect on alleviating positive symptoms, but most patients experienced unwanted adverse effects like sedation, weight gain or tremor [18]. There is a substantial discontinuation rate due to weight gain and other adverse side effects [19] and there is generally a growing concern about long-term consequences of antipsychotic drugs on somatic and mental health [20,21]. In a recent study we showed that the majority of children and adolescents using antipsychotic drugs were diagnosed with non-psychotic disorders like hyperkinetic, anxiety or depressive disorder [22]. The extent to which younger patients diagnosed with psychotic disorders is treated with antipsychotic drugs in Norway is unknown.

Data from national health registries have the advantage that they cover all individuals who have been in contact with the health care system, but there is concern regarding validity of diagnostic information and completeness of data [23]. For severe mental disorders like schizophrenia and bipolar disorder, the national clinical guidelines recommend assessment and start of treatment in specialized mental health care [24]. Thus, the prevalence estimates of severe mental disorders based on national health care registry data will be representative of the general population.

1.1. Aims of the study

Based on linked individual-level data from national health registries we aimed to estimate 1) incidence rates of severe mental disorders, here defined as schizophrenia-like disorder, bipolar disorder, or severe depressive episode with psychotic symptoms, among 0–18 year old children and adolescents diagnosed in specialist health care in Norway during 2009–2011, 2) investigate the prevalence of co-morbid mental disorders, and 3) explore use of antipsychotics and other psychotropic drugs in this patient group.

2. Material and methods

The present study is based on linked data from the Norwegian Patient Registry (NPR) and the Norwegian Prescription Database (NorPD). Individual-level registry data were linked using the unique 11-digit personal identity number assigned to all individuals living in Norway.

2.1. Data sources

2.1.1. The Norwegian Patient Registry (NPR)

The NPR is an administrative database of records reported by the specialist health care, i.e. all hospitals and outpatient clinics owned or financed by the government, including most private practitioners in child and adolescent psychiatry. Thus, the NPR

Table 1
Classification of psychotropic drugs.

Group	Type	ATC code
Antipsychotic drugs	Any	N05A except N05AN01 (lithium)
First generation antipsychotics	Perphenazine	N05AB03
	Haloperidol	N05AD01
	Zuclopentixole	N05AF05
Second generation antipsychotics	Ziprasidone	N05AE04
	Olanzapine	N05AH03
	Quetiapine	N05AH04
	Risperidone	N05AX08
	Aripiprazole	N05AX12
	Paliperidone	N05AX13
	Clozapine	N05AH02
Auxiliary antipsychotic drugs	Chlorpromazine	N05AA01
	Levomepromazine	N05AA02
Lithium	n.a.	N05AN01
Antidepressant	Any	N06A
Antiepileptic drugs used for treatment of bipolar disorder	Carbamazepine	N03AF01
	Valproic acid	N03AG01
	Lamotrigine	N03AX09
	Topiramat	N03AX11
Anxiolytic drugs	Any	N05B
Psychostimulant	Any	N06BA

Abbreviations: ATC: Anatomic Therapeutic Classification; n.a.: not applicable.