

The Growing Trend of Prescribing Antipsychotics for Young People in Finland, 2000 to 2010

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Abstract

Background: According to previous reports from many countries (e.g., the United States, Germany, the United Kingdom), the use of antipsychotic drugs has increased among young people. Antipsychotics have also increasingly been prescribed for non-psychotic disorders.

Objective: The purpose of this study was to estimate the rate at which antipsychotics were prescribed for young people in the age groups of 10 to 14 years, 15 to 19 years, and 20 to 24 years in Finland in the years 2000, 2005, and 2010.

Methods: This was a nationwide register study using data from the databases of Statistics Finland and the Finnish National Prescription Register. Statistics Finland's databases provided background information, including the total number of young people and the Finnish National Prescription Register keeps record of all drug orders reimbursed by the Social Insurance Institution of Finland.

Results: The prescription of antipsychotics grew 6.8-, 4.6-, and 2.6-fold over the study period for these three age groups, respectively. For the youngest age group, use was more common among males than females in all three periods studied. During the course of the study period, the use of antipsychotics became more common among females: in 2010, antipsychotics were more commonly used among females than males in both the 15- to 19-year-old age group and the 20- to 24-year-old age group. The younger the patient, the higher the probability that the indication for medication was a non-psychotic disorder.

Conclusions: In Finland, the trends involved in the prescription of antipsychotic medications resemble those seen in many Western countries. Therefore, it is important that the safety and effectiveness of these pharmaceuticals be investigated among young people as well.

Keywords: Antipsychotics, child, adolescent

Introduction

In many countries (e.g., the United States, Canada, the United Kingdom), since the introduction of the second-generation antipsychotics, antipsychotic medications have been increasingly prescribed for adults as well as children and adolescents (1-4). According to a previous study, there was a nine-fold increase in the prescription of antipsychotics for children from the years 1993 through 1998 to the years 2005 through 2009 in the United States (5). The current practice is to treat even behavioral problems with antipsychotics, and today the majority of antipsychotic medications prescribed for

children and adolescents are for the treatment of disruptive behavior (6). Prepubertal children who receive antipsychotic medication are usually male and being treated for attention-deficit/hyperactivity disorder and conduct disorders (3,4). Among both youth and adults, the proportion of second-generation antipsychotics prescribed for the treatment of schizophrenia has decreased, whereas the treatment of anxiety disorders with antipsychotics has roughly doubled (5). In a large convenience sample of adolescent psychiatric outpatients, 77% of those who were receiving

antipsychotic medication did not have a diagnosis of a psychotic disorder (7).

In terms of effectiveness, the differences among various antipsychotics are relatively small, and they mostly concern adverse effects (8). Children and adolescents seem to have a higher risk than adults of experiencing adverse events, such as extrapyramidal symptoms, prolactin elevation, sedation, weight gain, and metabolic effects (9). The typical side effects of second-generation antipsychotics include weight gain, dyslipidemia, and hyperglycemia, all of which increase the risk for cardiovascular disease (10). There is increasing concern about the negative effects of antipsychotics; before treatment with any antipsychotic is begun, a careful risk–benefit assessment should be conducted (8).

The purpose of this study was to assess trends in the prescription of antipsychotic medications for young people in Finland during the first decade of the twenty-first century, both overall and separately for the genders as well as separately for psychotic and non-psychotic disorders.

Methods

This was a national register study that made use of information extracted from the databases of two registers: Statistics Finland and the Finnish National Prescription Register. Statistics Finland's databases served as the source of population statistics, which included the number of young people in the three age groups (i.e., 10 to 14 years, 15 to 19 years, and 20 to 24 years) in the years 2000, 2005, and 2010. The age groups were chosen to align with the practices of the Finnish National Prescription Register, which keeps records of all drug orders reimbursed by the Social Insurance Institution of Finland. Every individual with at least one reimbursed prescription was considered to be a potential case for this study. "Higher special reimbursement for difficult psychosis and other difficult mental health problems" constituted a category of its own; in practice, this means that all young people who are entitled to "higher special reimbursement" have psychotic symptoms.

The drugs in the register are coded using the Anatomical Therapeutic Chemical classification system; for the antipsychotics, the associated code is N05A (11). The data recorded in the register include patients' ages and genders.

In this study, the prevalence of the prescription of antipsychotics was calculated for the three different age groups, for both genders together, and for females and males separately and then compared for the years 2000, 2005, and 2010. The actual prevalence was calculated as the proportion of the individuals with reimbursed prescriptions for

antipsychotics in relation to the total number of age- and gender-matched individuals at the given time. The use of antipsychotics for psychosis was also analyzed separately for the same age groups and the same years. The differences between the genders were estimated by comparing the prevalence rates for antipsychotic use in each study year with the use of chi-squared tests. Chi-squared tests were also used to assess the rate of antipsychotic medication prescribed specifically for psychotic disorders as well as the change in antipsychotic usage throughout the study period. The change in the rate of antipsychotic usage was assessed by comparing the usage rates from 2010 with those from 2000. The statistical analyses were carried out with the use of SAS 9.2 software.

Results

The prevalence of the prescription of antipsychotic medications throughout the study period is presented in Table 1. The rate of antipsychotic usage increased many times over from 2000 to 2010, and the differences were statistically significant ($p < .001$). As shown in the table, depending on the age group, the use of antipsychotics grew three- to five-fold in females and two- to seven-fold in males.

The prevalence of the prescription of antipsychotics specifically for psychotic disorders was also assessed separately, and the results are presented in Table 2. These analyses also demonstrated a multi-fold increase from 2000 to 2010 in the prescription of antipsychotics, and the changes in the rates were statistically significant ($p < .001$) for all age groups. The proportion of cases that involved a psychotic disorder being the indication for the prescribed antipsychotic medication increased with age (Figure 1).

Discussion

According to this study, the prescription of antipsychotics for young people increased multiple times in Finland from 2000 to 2010, and this was also the case in other countries, including the United States and Canada (2-5). There was an increase in the prescription of antipsychotics for psychotic disorders as well as for non-psychotic indications. In Canada, the use of antipsychotic medications for the treatment of schizophrenia in patients who were less than 18 years old remained stable between the years of 1999 and 2008 (2).

In the youngest age group (10 to 14 years old), the use of antipsychotic medication was more common among males than among females throughout the study period. This is in accordance with previous reports from the United States, Canada, and Germany, which suggests that, in the youngest age

TABLE 1. The prevalence of the prescription of antipsychotic drugs to Finnish children and adolescents in 2000, 2005, and 2010. The results are presented for three age groups (10 to 14 years old, 15 to 19 years old, and 20 to 24 years old) as well as separately by gender

| | | 2000 | | 2005 | | 2010 | | Growth* | p [†] |
|--------------------|------------------|---------|---------------------|---------|---------------------|---------|---------------------|---------|----------------|
| | | N | Prevalence | N | Prevalence | N | Prevalence | | |
| 10 to 14 years old | Entire age class | 318,634 | 0.10% (n = 323) | 328,539 | 0.25% (n = 818) | 296,709 | 0.68% (n = 2024) | 6.8 | <.001 |
| | Females | 155,687 | 0.07% (n = 106) | 161,212 | 0.11% (n = 179) | 145,131 | 0.34% (n = 487) | 4.9 | <.001 |
| | Males | 162,947 | 0.13% (n = 217) | 167,327 | 0.38% (n = 639) | 151,578 | 1.01% (n = 1537) | 7.8 | <.001 |
| | p [‡] | <.001 | | <.001 | | <.001 | | | |
| 15 to 19 years old | Entire age class | 331,778 | 0.33% (n = 1099) | 320,942 | 0.64% (n = 2042) | 332,084 | 1.46% (n = 4835) | 4.6 | <.001 |
| | Females | 162,161 | 0.33% (n = 532) | 156,824 | 0.83% (n = 1143) | 162,860 | 1.67% (n = 2724) | 5.1 | <.001 |
| | Males | 169,617 | 0.33% (n = 567) | 164,118 | 0.55% (n = 899) | 169,224 | 1.25% (n = 2111) | 3.8 | <.001 |
| | p [‡] | .76 | | <.001 | | <.001 | | | |
| 20 to 24 years old | Entire age class | 327,230 | 0.79% (n = 2597) | 333,936 | 1.16% (n = 3863) | 327,780 | 2.02% (n = 6616) | 2.6 | <.001 |
| | Females | 160,146 | 0.66% (n = 1060) | 163,226 | 1.11% (n = 1809) | 159,963 | 2.23% (n = 3569) | 3.4 | <.001 |
| | Males | 167,084 | 0.92% (n = 1537) | 170,710 | 1.20% (n = 2054) | 167,817 | 1.82% (n = 3047) | 2.0 | <.001 |
| | p [‡] | <.001 | | .011 | | <.001 | | | |

*Increase in the prescription of antipsychotics from 2000 to 2010 (fold)

†Chi-squared test, comparison between 2000 and 2010

‡Chi-squared test, comparison between genders

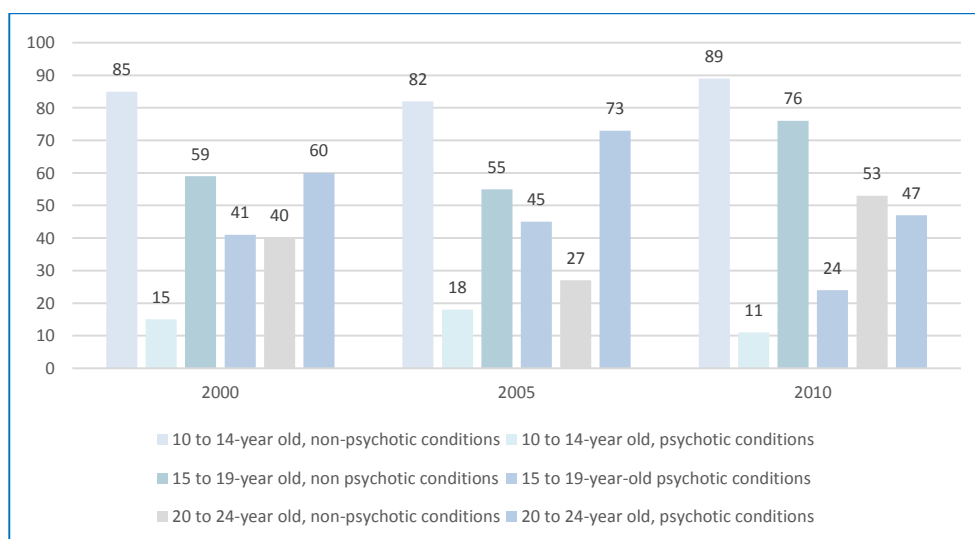
TABLE 2. The prevalence of the prescription of antipsychotic drugs for the treatment of psychotic disorders among Finnish children and adolescents in 2000, 2005 and 2010. The results are presented for three age groups: 10 to 14 years old, 15 to 19 years old, and 20 to 24 years old

| | | 2000 | | 2005 | | 2010 | | Growth* | p [†] |
|------------------------------|--|---------|---------------------|---------|---------------------|---------|---------------------|---------|----------------|
| | | N | Prevalence | N | Prevalence | N | Prevalence | | |
| 10 to 24 years old, in total | | 977,642 | 0.21% (n = 2056) | 983,417 | 0.39% (n = 3865) | 956,573 | 0.47% (n = 4482) | 2.2 | <.001 |
| 10 to 14 years old | | 318,634 | 0.015% (n = 48) | 328,539 | 0.044% (n = 143) | 296,709 | 0.071% (n = 212) | 3.5 | <.001 |
| 15 to 19 years old | | 331,778 | 0.14% (n = 456) | 320,942 | 0.29% (n = 923) | 332,084 | 0.35% (n = 1177) | 2.5 | <.001 |
| 20 to 24 years old | | 327,230 | 0.47% (n = 1552) | 333,936 | 0.84% (n = 2799) | 327,780 | 0.94% (n = 3093) | 2.0 | <.001 |

*Increase in the prescription of antipsychotics from 2000 to 2010 (fold)

†Chi-squared test, comparison between 2000 and 2010

FIGURE 1. The percentage of antipsychotic drugs prescribed for non-psychotic and psychotic conditions among Finnish children and adolescents between the ages of 10 and 24 years in 2000, 2005, and 2010



group, users of antipsychotic medications are mostly boys (3,4,12). In 2005, the prescription of antipsychotics was more common among 15- to 19-year-old females than among males in the same age group. In 2010, the use of antipsychotics was more common among females than among males in those 15 to 19 years old and 20 to 24 years old. The trends seen in Finnish practice may grow closer to those seen in the United States, where antipsychotic use was significantly greater for female adults than male adults (≥ 21 years old) between 1993 and 2009 (5).

In Finland, there are few official indications for antipsychotic use in children: risperidone is used for conduct disorders associated with aggressiveness from the age of 5 years; ziprasidone is used for bipolar disorder from the age of 10 years; aripiprazole is used for bipolar disorder from the age of 13 years and for schizophrenia from the age of 15 years; and clozapine is used for patients who are more than 15 years old for treatment refractory schizophrenia. However, the off-label use of antipsychotics is very common, and children and adolescents often receive drugs that are not licensed for use by minors (13). This practice is an overall problem in the treatment of children, with 50% to 75% of the prescription of drugs to children estimated to involve off-label use (17). Antipsychotics are prescribed for children and adolescents for many indications without being backed up by scientific data regarding their effectiveness and safety. It is likely that antipsychotics are often used for the treatment of attention-deficit/hyperactivity disorder and conduct disorders (15,16). There are also reports about the widened use of atypical antipsychotics for anxiety and depressive disorders (5).

The increase in the prescription of antipsychotics has taken place despite the accumulating evidence of their serious side effects (9,10). Children and adolescents are at increased risk for antipsychotic-related side effects as compared with adults (8). Metabolic and endocrine abnormalities cause the most concern. In addition, there are insufficient data available regarding the long-term effects of these pharmaceuticals (16).

For child and adolescent patients, treatment is administered during a time of rapid brain development. Thus, it is essential to evaluate the possible effects—whether favorable or detrimental—of antipsychotic medications on cognition and other aspects of brain maturation at various ages and with various durations of exposure (16).

Clinical Significance

The prevalence of the prescription of antipsychotics has increased with the introduction of the second-generation antipsychotics in Finland as well as in several other Western countries. It is important that the safety and effectiveness of these pharmaceuticals be carefully studied for use among children and adolescents and for the treatment of various disorders.

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