



Metformin for Overweight & Obese Children and Adolescents with Bipolar Spectrum Disorders Treated with Second-Generation Antipsychotics

Second-Generation Anti-Psychotics: Attitudes and Adherence among Adolescents

Bipolar disorders affect 2% of youth worldwide (Goldstein, et al., 2016). Pharmacological treatment strategies may include the use of second-generation antipsychotics (SGAs). While SGAs are effective in managing symptoms of bipolar disorder, there are several side effects that may negatively influence adherence to these medications, particularly among adolescents (Goldstein, et al., 2016). Of note, children and adolescents appear to have a greater risk than adults for SGA-related weight gain (Martinez-Ortega, et al., 2013). It is widely known that obesity increases risk of developing Type II diabetes as well as cardiovascular, neurological, and digestive conditions.

Methods:

Separate questionnaires for patients, parents, and clinicians were developed using the data collection website SurveyMonkey. The parent and patient questionnaires were sent out through the Depression and Bipolar Support Alliance (DBSA) online groups and Facebook page. Hard copies were also given out at local meetings of the National Alliance on Mental illness to ensure a diverse sample that includes people without internet access. Clinical surveys were distributed to child and adolescent psychiatrists in the Cincinnati, Ohio, Dayton, Ohio, and Long Island, New York regions. Questionnaires were also distributed to the members of the Southwestern Ohio's branch of the American Academy of Child and Adolescent Psychiatry listserv. Patients diagnosed with bipolar disorder prior to age 18, parents of a child diagnosed prior to age 18, and clinicians with experience prescribing SGAs were included in the sample.

Side Effects:

When asked to rank the most concerning treatment emergent side effects:

- Patients reported weight gain as the most concerning treatment emergent side effect, difficulty concentrating as the second, and feeling sleepy as the third.
- Parents rated the most common and problematic side effects as weight gain, movement related problems, and difficulty with concentration/memory.
- Clinicians ranked weight gain as the most concerning side effect of SGA use followed by hyperglycemia and sedation.

Adherence:

When asked to report how often participants deviate from their medication regimen:

- 34% of patients reported taking their medication as prescribed less than 75% of the time.
- 28% of parents responded that to their knowledge, their child stopped taking their medication on their own.

When asked the top barriers to medication adherence:

- Patients reported the barriers that cause them to deviate from their medication regimen are weight gain, trouble concentrating or remembering, and excessive sleepiness.
- Parents ranked the top four reasons they thought their child stopped taking their medication as overall side effects, forgetting to take their medication, not liking being told to take their medicine, and weight gain.



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Attitudes toward Metformin:

When asked, “Knowing that weight gain is a common side effect would you consider the addition of another medication to minimize weight gain”:

- 62% of patients responded that upon starting a medication associated with weight gain, they *definitely* would be willing to start a second medication to mitigate such weight gain.
 - However, 70% of clinicians responded that they were *not at all likely* to prescribe metformin at the initiation of SGA therapy.
- 59% of parents said the use of medication to combat weight loss was only a *somewhat acceptable* approach.
 - 55% would consider adding a second medication if their child gained 10 or more pounds.
- Majority of parents responded that learning about a healthy lifestyle and a healthy diet are *very acceptable* strategies to manage weight gain in their household.
- 87% of clinicians responded they would be *somewhat or extremely* likely to add metformin if the patient complained about weight gain.
 - 61% of physicians said they would be *extremely likely* to prescribe metformin if the patient gained more than 10 pounds.

Conclusion:

SGA-related weight gain impairs medication adherence in young patients with bipolar disorder. Interestingly, patients report weight gain as the top barrier to SGA-adherence, whereas parents ranked weight gain as the fourth. Many young patients are open to initiating pharmacologic treatment to mitigate SGA-related weight gain at the start of treatment. However, parents and clinicians are much more hesitant to start a concomitant medication at that time. Although clinicians and parents support healthy lifestyle interventions as an *acceptable* approach to weight gain, both would consider adding pharmacological treatment if the patient complained about gaining weight. Open communication among patients, their parents, and their clinicians regarding potential side effects of SGA treatment and possible strategies to minimize these side effects is crucial to maximize medication adherence and improve the physical and mental health in this vulnerable population.

References:

- Goldstein, T. R., Krantz, M., Merranko, J., Garcia, M., Sobel, L., Rodriguez, C., et al. (2016). Medication Adherence Among Adolescents with Bipolar Disorder. *Journal of Child and Adolescent Psychopharmacology*, 1-9.
- Martinez-Ortega, J., Funes-Godoy, S., Diaz-Atienza, F., Gutierrez-Rojas, L., Perez-Costillas, L., & Gurpegui, M. (2013). Weight gain and increase of body mass index among children and adolescents treated with antipsychotics: a critical review. *European Child and Adolescent Psychiatry*, 457-479.

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