

Interventions to Manage Weight Gain for Pediatric Population on Antipsychotics

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Introduction

- ❖ The need to monitor and treat weight gain in children on antipsychotic therapy is not new but is also not consistently done by providers.
- ❖ One study examined that over 300 children who were prescribed antipsychotic medication, found that only 72% percent of them had their BMI calculated at start of treatment and even less had their BMI recorded at 12-week follows and annual follow ups (Sorabh et al., 2022).
- ❖ When antipsychotics cause rapid weight gain in children, this in turn may lead to more serious issues such as diabetes or cardiovascular disease (Schneider et al., 2020).
- ❖ In a retrospective cohort study of over 6,000 children and adolescents, the long-term use of atypical antipsychotics, in children with a diagnosis of bipolar disorder, was associated with a cumulative increase in BMI (Patel et al., 2017).
- ❖ While some studies have targeted reducing or slowing down weight gain in children on antipsychotics, there are no clear, updated guidelines for clinicians to follow regarding adding specific medications or non-pharmacological methods to treatment.
- ❖ Treatment recommendations at this time include counseling patients on lifestyle interventions, decreasing doses, stopping medication, switching medication to a different antipsychotic and examining other medications patient may be on that causes weight gain (Ho et al., 2011).

Purpose

- ❖ Various studies support patients can lose or maintain weight when they experience pharmacologic therapy or non-pharmacologic therapy while receiving antipsychotic treatment.
- ❖ This systematic review of the literature aimed to summarize and categorize therapies that have been shown to be safe and effective treatment options for reduction of weight or maintenance of weight for pediatric patients on antipsychotic medication regimens.

PICOT Question

- ❖ What are the most effective pharmacological and non-pharmacological interventions in managing or reducing weight gain in children aged 6-18 on antipsychotic therapy?

Methods

Project Design

- ❖ A systematic review of the literature guided by Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used (Stewart et al., 2015).

Search Strategy

- ❖ Published literature was searched through Medline, CINAHL, PubMed, PubMed Central and clinicaltrial.gov.
- ❖ Search terms included were “weight gain,” “BMI,” antipsychotics,” “pediatrics,” “children,” “pharmacological,” “non-pharmacological,” “interventions,” and “bipolar disorder.”
- ❖ Ancestry search was utilized by reviewing citations in the text of articles found.
- ❖ Inclusion criteria: primary research, published between 2012-2022, in English, peer-reviewed, addressing weight management treatment for children ages 6-19 years on antipsychotic therapy.
- ❖ Exclusion criteria: Study design such as non-clinical trials, editorials, literature reviews, trials including non-humans, studies with patients over the age of 20, and articles published in languages other than English
- ❖ Quality appraisal tool used: Rapid Critical Appraisal Questions for Randomized Clinical Trials



	Type of Intervention by Study Author					
	Melatonin	Metformin	Topiramate	Zonisamide	Healthy Lifestyle Education	Switch Antipsychotic
Anagnostou et al., 2016		■				
Arman., 2022			■			
Correll et al., 2020		■				■
Detke et al., 2016					■	
Handen et al., 2017		■				
Mostafavi et al., 2017	■					
Shapiro et al., 2016			■	■		

Findings

Characteristics of the Studies

- ❖ The sample of articles reviewed included 5 randomized controlled trials, 1 quasi-experimental study, and 1 retrospective study.
- ❖ All studies included in literature review had participants that were involved in an outpatient setting.
- ❖ Six of the seven studies were done in the US and one study (Detke et al., 2016) was conducted in Russia, Germany, and Poland.
- ❖ Interventions of non-pharmacological means included counseling sessions and programs that consisted of handouts on healthy eating and exercise (Detke et al., 2016).
- ❖ Pharmacological efforts used included addition of metformin (Anagnostou et al., 2016, Handen et al, 2017; Correll et al., 2020), melatonin (Mostafavi et al, 2020), and zonisamide or topiramate (Arman & Haghshenas, 2022; Shapiro et al., 2016).
- ❖ Each study used waist circumference, body weight, and BMI as outcome variables measuring weight changes.

Major Themes

Two major themes across study findings were *pharmacological interventions* and *non-pharmacological interventions*

Pharmacological Interventions Most Successful

- ❖ Pharmacological intervention were most successful in decreasing or maintaining weight and BMI across studies
- ❖ Study concluded that metformin was superior to placebo in reducing weight gain associated with atypical antipsychotics in children (Anagnostou et al., 2016).
- ❖ Continued study of Anagnostou et al., 2016 found that BMI remained stable with an additional 16-weeks of metformin treatment with the previous group that received metformin and the previous placebo group BMI had a significant decrease during the additional 16-weeks (Handen et al., 2017).
- ❖ Study concluded that both, adding metformin and switching to a different antipsychotic, aripiprazole or perphenazine, decreased BMI z-score significantly (Correll et al., 2020).
- ❖ Adjunct of topiramate with aripiprazole did not decrease BMI, but placebo group had significant weight and BMI changes (Arman & Haghshenas, 2022).
- ❖ All dosing levels of topiramate and zonisamide, with exception of over 200mg daily dosing, observed statistically significant weight reduction in retrospective chart review (Shapiro et al., 2016).
- ❖ Adjunct of melatonin with olanzapine and lithium regimen associated with smaller weight gain and BMI increased than placebo group (Mostafavi et al., 2017).

Non-Pharmacologic Interventions Important, But Not Effective

- ❖ Non-pharmacological interventions did not result in decreased or maintenance of weight or BMI
- ❖ Patients taking olanzapine received ‘intense’ dietary training, education on regular exercise, a pedometer, and review of exercise habits during each visit of study did not yield significant differences of BMI between the ‘intense’ and standard placebo group.

Implications for Practice

Providers should:

- ❖ Gather baseline information such as height, weight, blood pressure, fasting glucose, lipid panel and family history at patient’s first appointment and update information regularly.
- ❖ Provide information to patient and family on risks and side effects of medication, paying particular attention to metabolic complications.
- ❖ “Start low and go slow” when prescribing antipsychotics.
- ❖ Trial adjunct of metformin with patients that have significant increase in BMI, due to multiple studies that support its effectiveness.

Recommendations for Future Work

- ❖ Studies should examine pre-antipsychotic weight to determine if adjunct weight management pharmacological methods result in return to baseline weight.
- ❖ Only 7 studies met inclusion criteria, more clinical studies should be conducted to determine the best intervention to manage weight gain with antipsychotic use.
- ❖ Researchers should focus on side-effect profile, efficacy, and safety.
- ❖ Studies should include more participants on a variety of antipsychotic medications, to include those used off-label for children.



References

References available upon request

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