

Study finds metformin can help manage weight gain side effect of bipolar medications

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A new large-scale study led by researchers at the University of Cincinnati and Northwell Health, New York's largest health care provider, found the drug metformin can help prevent or reduce weight

gain in youth taking medication to treat bipolar disorder.

The collaborative team presented its findings during a symposium at the American Academy of Child and Adolescent Psychiatry [conference](#) in New York City Oct. 27.

Weight gain side effect

Medications to treat bipolar disorder, known as second-generation antipsychotics (SGAs), are often effective at helping young patients' [mental health](#) improve but can have significant side effects including elevated blood pressure and glucose, increased appetite and [weight gain](#).

"We, the clinicians naively justified that we're improving your psychosis, so just deal with the [weight](#) gain," said Victor Fornari, MD, a child/adolescent psychiatrist at Northwell Health. "But patients stopped taking their medicine because they said they didn't want to gain weight."

UC's Christina Klein, Ph.D., said in addition to patients not taking their medication, the weight gain side effects can lead to lifelong harmful health outcomes.

"So you're not just looking at the mental health, but you're looking at the physical health of the whole person," said Klein, a research scientist in UC's Department of Psychiatry and Behavioral Neuroscience in the College of Medicine.

Klein said a survey found patients want interventions to address the side effects as soon as possible, while doctors and caregivers prefer a wait and see approach.

Metformin, a medication typically used for Type 2 diabetes, is known to also prevent weight gain, but nearly all psychiatrists surveyed initially

said they did not feel comfortable prescribing it, leading to the study testing metformin's effect.

Study design

Klein said the study had a pragmatic design, meaning it had broad enrollment criteria and was conducted at a wide variety of clinics, even those without prior participation in research studies.

"We wanted the regular person who was just going to their doctor," Klein said. "It's not this perfect patient where you have this disorder and nothing else, you're only taking this medicine, you're adherent to the medicine or you show up every time."

A total of 1,565 patients aged 8-19 with [bipolar disorder](#) taking SGAs were enrolled in the study, a "Herculean" accomplishment according to Fornari.

"It was 60 sites across the country, and it was a large sample of patients to really demonstrate what's going on," he said. "I don't know that anybody has done a study of this magnitude with almost 1,600 kids and their families."

Everyone enrolled in the trial received a [lifestyle intervention](#) with recommendations for [healthy eating](#) and exercise. Half of the youth were randomized to receive the healthy lifestyle intervention and were prescribed metformin.

"If patients weren't doing well on the metformin, they could come off and stay in this study," Klein said. "Really we're just trying to meet the patients when and where they received services, seeing what happens to them over the course of two years."

Prior to beginning the interventions, researchers collected information on youth living with bipolar disorders' quality of life and adherence to taking their medication as prescribed.

While 87% of youth reported they took their medication regularly, a majority reported they were unhappy with their weight and/or had been sad, mad or frustrated about their weight.

Researchers also collected baseline metabolic data to determine if youth had metabolic syndrome, which Northwell's Claudine Higdon, MD, said is a common consequence of taking SGAs that places youth at risk for diabetes and cardiovascular disease. The study found 33% of youth enrolled in the study had metabolic syndrome at the start.

"The key elements of metabolic syndrome are obesity, high [blood pressure](#), elevated triglycerides and elevated glucose," said Higdon, a child/adolescent psychiatrist. "It is important that clinicians monitor for metabolic syndrome when treating youth with second-generation antipsychotics."

Study results

UC's Jeffrey Welge, Ph.D., said in the short-term six-month follow-up data, metformin had a modest but significant effect at preventing and in some cases reversing weight gain in the study's patient population. The drug was also found to be safe, with some gastrointestinal distress symptoms being the only side effects reported.

"It's not a drug you take and weight falls off of you, but it tends to reduce that out of control appetite which we think then makes it easier for patients to adhere to a healthy diet and as they lose some weight maybe also make it easier for them to engage in more exercise," said Welge, professor in UC's Department of Psychiatry and Behavioral

Neuroscience and Department of Environmental and Public Health Sciences. "So, the lifestyle is really what's driving good outcomes, but metformin is in some cases putting the wind at their back to help with that."

"It's safe, effective and very inexpensive. It's an intervention that has the potential to have widespread applicability," Fornari added. "It's not a medicine that you need to have an endocrinologist or a pediatrician prescribe, and I think it really speaks to the fact that the psychiatrist needs to be caring for the entire person, the physical and the mental health of the patient."

While having an effect on weight gain, metformin was not found to have a significant effect on youth's metabolic syndrome in the short term, Welge said.

"Further research is needed on effective interventions for [metabolic syndrome](#)," Higdon said.

Provided by University of Cincinnati

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