

Beyond Ozempic: Bridging the Gap in Diabetes and Obesity Treatment

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ABSTRACT: The global rise of type 2 diabetes and obesity has created an urgent demand for affordable treatments. While drugs like Ozempic and Wegovy have shown promise in managing blood sugar and promoting weight loss, their high cost—over \$1,000 per month—limits accessibility for many. This research explores the development of new therapeutic agents targeting metabolic pathways to regulate blood sugar and fat metabolism. These agents aim to provide the same benefits as current medications but at a fraction of the cost. If successful, this approach could greatly expand access to life-saving treatments for millions of people, alleviating the global burden of T2D and obesity.

The global health crisis posed by type 2 diabetes (T2D) and obesity is becoming increasingly urgent. With over half a billion people worldwide living with diabetes and more than 650 million dealing with obesity, these conditions have become two of the most pressing public health challenges of our time.¹ The situation is dire, and the need for effective, affordable treatments has never been greater.

Today, the most well-known medications for managing T2D and obesity are Ozempic and Wegovy. These drugs have garnered significant attention, not just for their ability to help manage blood sugar levels but also for their effectiveness in promoting weight loss. Ozempic has been revolutionary because it offers significant weight reduction without the need for invasive procedures like bariatric surgery, which, while effective, is costly, carries risks, and requires substantial recovery time. However, despite the promise of these medications, there is a significant problem: the high cost. Priced at over \$1,000 per month, these treatments are simply out of reach for many people, even in wealthier nations like the United States.² To make matters worse, insurance companies often do not cover these drugs when they are prescribed for weight loss, leaving patients to bear the full cost.^{1,2} As a result, only a small fraction of those who could benefit from these medications can afford them.

The inaccessibility of these treatments is particularly alarming given the severe health consequences associated with obesity. Obesity is not just about excess weight; it significantly increases the risk of developing serious conditions such as heart disease, stroke, certain types of cancer, and respiratory issues. These comorbidities can drastically shorten life expectancy and diminish quality of life. The inability of many to access effective treatments like Ozempic means that these potentially life-threatening conditions remain inadequately addressed, further highlighting the urgent need for more affordable and accessible therapeutic options.

The inaccessibility of these drugs has far-reaching consequences. The high demand, driven in part by aggressive marketing campaigns and endorsements from celebrities, has created a situation where manufacturers struggle to keep up with supply.³ This scarcity has sparked ethical concerns, as some individuals use these expensive drugs to lose a few pounds rather than for managing serious health conditions like diabetes and obesity. This trend not only limits access for those who truly need the medications but also highlights the growing divide between those who can afford cutting-edge treatments and those who cannot.

Given these challenges, there is an urgent need to develop new treatments that are both effective and affordable. My research aims to address this critical gap by exploring a new class of therapeutic agents that could offer a viable alternative to current expensive medications. These

agents work by targeting specific pathways in the body that play a crucial role in regulating metabolism, controlling blood sugar levels, and managing weight. By focusing on these pathways, we hope to create treatments that are just as effective as existing drugs but at a fraction of the cost.

One of the key aspects of our research involves designing small, specialized molecules that can interact with these pathways in a more precise and targeted way. These molecules are designed to work within the body, influencing the processes that control how we metabolize food, store fat, and regulate insulin production. We found that we can fine-tune these molecules so they can trigger the desired effects without causing unwanted side effects by simply adjusting the way these molecules are designed.

The potential impact of this research is immense. If successful, these new treatments could provide a much-needed alternative for the millions of people who are currently unable to afford existing medications. By offering a more accessible solution, we could help reduce the burden of T2D and obesity on individuals, families, and healthcare systems around the world. This could lead to broader public health benefits, as more people gain access to the treatments they need to manage their conditions effectively.

Moreover, the implication of this research goes beyond just diabetes and obesity. The approach we are taking could be applied to develop new treatments for a wide range of other health conditions. By targeting different pathways within the body, we could potentially create therapies for diseases that are currently difficult or expensive to treat. This could revolutionize the way we approach medicine, making cutting-edge treatments available to a much larger portion of the population.

However, there is still much work to be done. While our initial findings are promising, we need to conduct further studies to refine these molecules and ensure their safety and effectiveness. This involves testing different variations of the molecules to find the optimal design that offers the best results with the fewest side effects.

Despite these challenges, I am optimistic about the potential of this research to make a real difference in the lives of people affected by T2D and obesity. The current situation, where life-changing medications are out of reach for so many, is unacceptable. We have a responsibility to find solutions that are accessible to everyone, not just the wealthy few. By continuing to explore new and innovative approaches, we can help close the gap and ensure that more people have access to the treatments they need.

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