Artificial Intelligence Can Improve Diabetes Diagnosis

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Introduction

We know that for every diagnosed diabetic person there is another who may not know it. Due to the slow onset of symptoms, it is important to diagnose diabetes early. Some cases of prediabetes can last up to eight years.

Artificial intelligence may be able to fill this diagnosis gap. In medical science, one of the desired basic applications of artificial intelligence systems would be in clinical decision support.

Having the ability to quickly analyze a large volume of data, artificial intelligence algorithms can today identify patterns for various pathological conditions, helping health professionals in the final diagnosis and decision-making for treatment. AI detects early disease signs in medical imaging and analyzes genetic markers for personalized treatment plans, promising improved healthcare outcomes.

The earlier the diagnosis is made, the timelier the patient will make the necessary changes in his lifestyle and the appropriate treatment to "slow down" the progression of the disease.

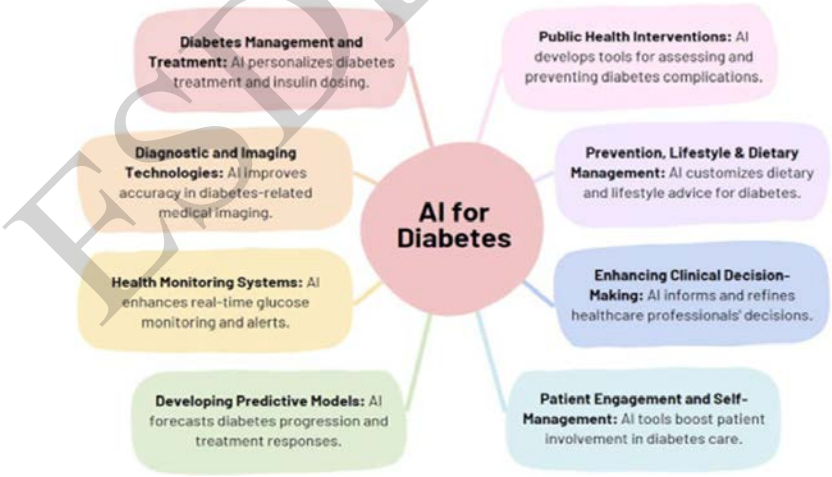

Figure (1): "AI for Diabetes", showcasing different applications of Artificial Intelligence (AI) in managing diabetes.

How AI can support diabetes care

AI can detect early signs of complications and predict disease progression. This early detection allows for timely intervention and better management of diabetes-related complications.

For example, AI-based medical devices are approved for automatic

retinal screening, which detects diabetic retinopathy (DR) from fundus images. The IDx-DR device, approved by the US Food and Drug Administration (FDA) for diagnosing DR, can make a diagnosis without needing professional judgment from an ophthalmologist. Its use has particularly benefited rural communities with limited access to specialized healthcare professionals.

AI, with its ability to fine-tune insulin dosages and enhance decision-making processes, can significantly support clinical treatment. Systems like Advisor Pro, which applies AI algorithms to analyze continuous glucose monitoring (CGM) and self-monitoring blood glucose (SMBG) data, can enable remote insulin dose adjustments.

AI can also assist in risk stratification, enabling healthcare professionals to identify high-risk individuals and provide targeted interventions.

We should not forget that AI could be useful only under the assumption that it will be evaluated at each step by the doctors who will make the final treatment decisions in cooperation with their patients.

It must be realized that with the complexity caused by the combination of scientific research, rapid technological developments, the availability of a large volume of data, but also the expansion of digital functions in many areas of health systems, artificial intelligence becomes necessary.

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