Disparities & Inequalities in Type 1 Diabetes

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Introduction

Type 1 Diabetes is an autoimmune condition characterized by a deficiency in insulin due to the destruction of pancreatic β-cells. This leads to elevated blood glucose levels. The primary treatment involves daily administration of exogenous insulin, but it falls short in replicating natural insulin secretion of pancreatic β-cells, hindering effective glucose homeostasis. Optimal management of Type 1 Diabetes is achieved through insulin pumps and continuous glucose monitors. Unfortunately, the annual out-of-pocket expense for insulin can exceed $10,000, rendering it financially burdensome for individuals in a lower socioeconomic status who are dealing with Type 1 Diabetes. The objective of this poster presentation is to address the issues that people in low SES areas have when trying to obtain insulin for their T1DM and creating solutions for those issues.

The Problem

Problem: According to the American Diabetes Association, 1.9 million people in the United States are diagnosed with Type 1 Diabetes (T1DM). People in low SES are deemed to have less access to treatment for T1DM.

Socioeconomic Disparities:

Individuals with T1DM in a lower socioeconomic status (SES) face challenges in achieving optimal glycemic control, as indicated by research (Karges et al., 2017; Zuijdwijk et al., 2013). A notable disparity emerges between T1DM patients in low and high SES, with those in the latter category, especially those with annual household incomes exceeding $75,000, being more likely to receive physician recommendations for insulin therapies (Commissariat et al., 2017). Consequently, there exists an average HbA1c discrepancy of 1.3% between T1DM patients in low and high SES. Patients in higher SES exhibit a 39% higher likelihood of utilizing insulin pumps and a 37.3% higher likelihood of employing continuous glucose monitoring (CGM) systems compared to their counterparts in lower SES (Addala et al., 2021). The annual out of pocket cost of insulin can be upwards of $10,000 and $3600 for publicly insured people.

Solution #1

Create state-wide nonprofit patient assistance programs for Type 1 Diabetes for low SES people:

- Currently, there are some nonprofit patient assistance programs for Type 1 Diabetes, where people could obtain insulin in emergent situations, however these are not easily accessible.
- Creating state-funded nonprofit organizations that provide diabetic assistance to uninsured or publicly insured people or people in low SES areas would reduce the inaccessibility of insulin pumps for low SES people.
- Affordable Insulin Now Act of 2023: Qualifying entities would get reimbursement from the government if they gave diabetic patients a monthly insulin dosage for a copay of $35/month.
- Steps are being taken to get people insulin but is still a lot of work that needs to be done.

Solution #2

House β-islet cells in daily insulin injections, which would help replace β-islet cells long term

According to research, the most effective treatment to T1DM is β-islet cell Transplantation. This treatment is quite complex and requires hospital stays, which makes it quite expensive. (Chem et al. 2018). The proposed treatment, which essentially puts β-islet cells into at home insulin injections, costs significantly less than the transplantation treatment, as well as the normal insulin cost for uninsured people in a 10-year span.

Citations

