

Introduction

Type one diabetes (T1D) is one of the most life threatening autoimmune chronic disorders in public health. It affects about 213,000 adolescents under the age of 20 in the United States (Tönnies et al., 2023). According to the National Institute of Health in 2016, around 40.6% of them have diabetic ketoacidosis (DKA), a serious complication of T1D (Jensen et al., 2021).

DKA is a medical condition where too many ketones build up in the blood rapidly, due to the lack of insulin and high glucose levels (Chiasson et al., 2003). If left untreated, it inevitably leads to hyperglycemia, electrolyte disturbances, or even death in extreme cases (Chiasson et al., 2003).

Technologies such as CGMs and insulin pumps have been developed to monitor glucose levels and administer insulin injections (Marks et al., 2022). Although these technologies have been proven to improve diabetic care and are continuously advancing, DKA admissions are constantly increasing (Vellanki & Umpierrez, 2018). This indicates that there are external factors outside of technologies that contribute to DKA admissions.

Methods

This narrative review examined the effects of stress, burnouts, and financial barriers on DKA admissions among adolescents in the United States. Search terms such as “type one diabetes”, “diabetic ketoacidosis”, “adolescents”, and “psychological disorders” were used across multiple databases to identify relevant literature. Information was collected from peer-reviewed journals from PubMed, Journal of Pediatric Endocrinology and Diabetes, Ontario Health Technology Assessment Series, and Google Scholar.

A total of 15 sources were used to obtain this information. Surveillance reports, clinical outcome studies, and healthcare research were prioritized to develop a view of mental health issues and economic struggles affects the DKA admissions. Publications were reviewed for content such as DKA admission trends, access to diabetes technology, financial barriers, mental health challenges, and diabetes management

Objectives

The goal of this research is to identify how financial barriers and mental health challenges contribute to DKA admissions in type one diabetic adolescents.

- The impacts of financial barriers and limited access due to economic issues to diabetic technologies on DKA admissions will be examined.
- The effects of mental health challenges, stress, and burnouts, on DKA risk and diabetes management among adolescents will be discussed.

Implementation

Currently, patients calculate carbohydrate intake, exercise regularly, and treat hypoglycemia and hyperglycemia daily. Physicians such as endocrinologists provide support through quarterly follow-ups, diabetes education, and adjustments to insulin therapy. Many schools provide accomodation for glucose monitoring and insulin injections. Continuous communication between school, family, and physicians provides a better routine, but T1D creates unexpected challenges against balance.

Policy & Limitations

The United States has provided several programs and policies intended to improve access to diabetic care and support. Medicaid and the Children’s Health Insurance Program (CHIP) give health coverage for eligible adolescents. Mental health support has also increased. The American Diabetes Association (ADA) recommends psychosocial assessment and support as part of diabetes treatment. Currently, the Insulin ACT of 2026 is a federal bill moving through the U.S Senate with the purpose of lowering the cost of insulin for patients.

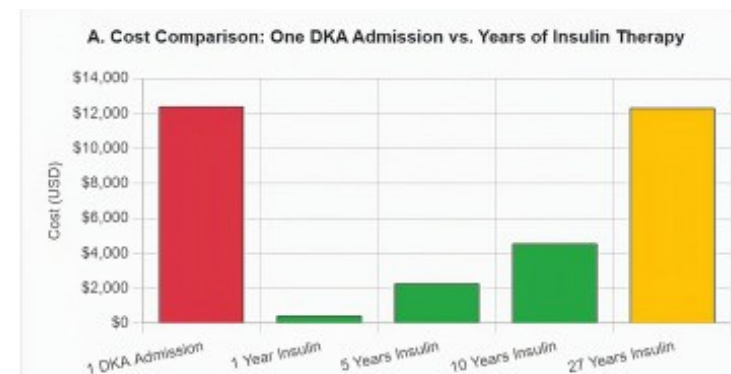


Figure 1: This graph compares the cost of one DKA admission to the cost for coverage in insulin therapy.

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Discussion

This narrative review shows that technological advancements alone cannot prevent the DKA admissions. Even though diabetic technology is effective and has its own benefits, their effectiveness can be influenced by outside factors surrounding it.

Financial barriers will limit access to technology while burnouts and stress may affect the adolescent’s ability to maintain their glucose. Therefore, a broader approach to diabetic care should combine both of these factors as management resources.

Conclusion

DKA is a public health concern in type one diabetic adolescents despite advancements in technology. This narrative review points out the mental health challenge factors and financial barriers as important non-technological factors that may contribute to DKA risk.

References

