

EDITORIAL

Personalized medicine in type 1 diabetes: The influence of socioeconomic context



La medicina personalizada en la diabetes tipo 1: explorando la influencia del contexto socioeconómico

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Type 1 diabetes mellitus (T1DM) represents one of the most significant challenges in the field of endocrinology due to its enormous clinical, social, and economic impact. Although its incidence rate appears to remain stable in our setting,¹ diagnostic precision, higher demands for control targets, and the advances made in the various available therapies have contributed to the progressive increase in the burden of this disease for professionals treating diabetes. These gradual changes require a review of the approaches applied in the routine management of T1DM.

With the advances made in various disciplines of knowledge over the last century, the paradigm of classical medicine focused on grouping signs and symptoms to classify diseases generically, has been giving way to precision medicine that observes the individual characteristics of each person.² In this context, our knowledge of processes at molecular and cellular levels has significantly expanded thanks to different (omic) technologies, radiological imaging modalities have been developed that provide a large amount of additional information to traditional parameters (radiomics), and we have a vast amount of digital data, both clinical and environmental, that allow us to understand

how social and environmental exposures can impact health (exposome).

For a long time now, we have known multiple variables, in addition to the eminently pharmacological aspects, that influence glycemic control and complications in people with T1DM. This is the case for variables such as education level,³ physical exercise,⁴ adherence to the Mediterranean diet,⁵ different seasons of the year,⁶ or smoking.⁷ Other essential aspects such as quality of life, therapeutic adherence, and glycemic control have also been studied in children and adolescents in Spain and are addressed in an article by Yoldi-Vergara et al. published in this very issue of *EDN*. This work shows the consistent association between nuclear family structure, shared supervision by both parents in diabetes management, and higher economic income with better glycemic control, treatment adherence, and quality of life for both patients and parents.⁸ This new evidence facilitates the identification of factors related to the socioeconomic environment, which helps us design better educational and follow-up strategies for people with diabetes, so necessary in this population. In particular, there is a lack of consideration of these aspects in transition programs for adolescents with T1DM.⁹

Technological advances have expanded the evaluation of glycemic control beyond HbA1c, highlighting the role of glucometric metrics derived from continuous glucose monitoring devices.¹⁰ The management of this large amount of

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data that has gradually been integrated into the routine clinical practice is behind the solid improvement in glycemic control that observed in a very diverse profile of people with T1DM in real life.¹¹ A crucial aspect in the application of technology in the field of diabetes is its ability to provide us with unprecedented quantity and quality of data. This allows us to more thoroughly evaluate the impact of the environment, known as the exposome, and explore, among other aspects, the impact of socioeconomic status on glycemic control and health.

Therefore, various studies that have analyzed the impact of socioeconomic status on glycemic control in people with T1DM have focused on the problem of access to technologies in regions where public funding for their acquisition is not available.^{7,12} However, it would be a mistake to assume that free access to technology completely eradicates the effect of socioeconomic status on T1DM control. In line with this premise, a recent study conducted in Spain, which had widespread access and free funding for continuous glucose monitoring devices, observed that, although there was a significant reduction in glycemic control disparities among different social strata, as well as differences between groups persisted clinically and statistically significant.¹³ This shows the need to delve deeper into the study of the social sphere to provide viable solutions to people with T1DM.

The information provided by glucose metrics of continuous glucose monitoring devices is intended to pave the way for an individualized approach that allows understanding and, when possible, intervening in the exposome of people with T1DM. However, the implications of relationships between social aspects and other variables such as physical exercise, diet quality, work schedule, toxic habits, or environmental quality remain unexplored. Technological advances give us the opportunity to better understand these relationships and try to provide better treatment and disease control for people with T1DM.

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Conflicts of interest

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